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ABSTRACT

This master's project contains two essays and a long poem, examining the possibilities of creative writing as a tool of inquiry in mathematics, history, science, film, art, and architecture. The project's first essay, "The Poet in the Warehouse," introduces a brief history of imaginative writing and an argument for its inclusion in multi-disciplinary high school and undergraduate programs. It is noted that since the piece strives to spotlight the importance of creative writing in learning, it alternates between the essay and a story which mirrors the issues in the essay, thus letting the form echo the function of the enterprise itself. In the project's second essay, "Space, Structure, Storage," a curriculum model is presented, pivoting on an essential question--architecture becomes a frontier for creative writing to thrive, though any subject might be chosen for the exploration (the model is flexible and expansive). The project's third selection, "The Glass Passage," is a long poem and commentary in which a way to understand more about architecture is assembled as an example of creative writing as inquiry. The project, as a whole, draws on psychologists, learning theorists, poets and fiction writers, creativity specialists, composition and reading theorists, poets and fiction writers, creativity specialists, composition and reading theorists, linguists and educational philosophers. (Contains 60 references and 4 appendixes of research material, much with illustrations.) (TB)

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ED 403 577

THE POET IN THE WAREHOUSE

CREATIVE WRITING AS INQUIRY: USING IMAGINATIVE WRITING TO EXPLORE OTHER DISCIPLINES

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CS 215700

A Project Submitted in partial fulfillment of the requirements for
The Ed.M degree in Interdisciplinary Studies and
The Klingenstein Fellows Program

By:
Frances McCue
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FOR FRED DUST AND MATTHEW STADLER

Thank you: Professors Clifford Hill, Ruth Vinz, Pearl Kane; my Klingenstein colleagues; the Klingenstein Fellowship; and to Professor Joan Ockman for encouraging me to explore architecture through poetry.

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OVERVIEW

PROJECT PROPOSAL:

To research the uses of creative writing in academic inquiry and to write a manual/thesis entitled *Creative Process as Inquiry: Using Imaginative Writing to Explore Other Disciplines.* The text will give a critical history of pedagogy in Creative Writing, and will offer writing exercises and heuristic activities to explore mathematics, history, science, film, art and architecture.

THE PROJECT:

Creative writing has long been neglected, along with the other arts, as a serious form of inquiry into other disciplines. The three sections of this project explore creative writing as a viable research method.

The first essay, **"The Poet in the Warehouse,"** introduces a brief history of imaginative writing and an argument for its inclusion in multi-disciplinary high school and undergraduate programs. Since the piece strives to spotlight the importance of creative writing in learning, it alternates between the essay and a story which mirrors the issues in the essay, thus letting the form echo the function of the enterprise itself.

In the second section, "**Space, Structure, Storage**," a curriculum model is presented, pivoting on an essential question. Here, architecture becomes a frontier for creative writing to thrive, though any subject might be chosen for the exploration. The model is flexible and expansive.

"**The Glass Passage**," the third section, is a long poem and commentary which I assembled as an example of creative writing as inquiry, a way to understand more about architecture.

As I worked on the various sections, the importance of all of the arts became more clear. I drew from psychologists, learning theorists, poets and fiction writers, creativity specialists, composition and reading theorists, linguists and educational philosophers. I found that the use of proverbs as cross-cultural structures, the development of constructivist curriculum, the role of memory, and the desire to write stories and poems engineered and illuminated my own inquiry and the resonance of the project. In the hope that this work will inspire the use of creative writing in a variety of settings, I also want this endeavor to be implemented, showing the necessity of all the arts as essential undertakings in the synthesis of real learning.

THE POET IN THE WAREHOUSE

There is something antic about creating
though the enterprise be serious.
Jerome Bruner

At first, the warehouse is a steamer trunk. Perhaps your own grandmother pressed her belongings into one like it, snapped the latches fatefully, and not knowing where she would next unspring them, loaded her trunk into a deep hull. The ship's ribs scratched against it, and water bled into blotches, spreading from the seams as the trunk rumbled beneath her on the long sail across a dark, never flattening sea. Inside: room enough for frocks, a shelf for books, and the vanity of a mirror when the cabinet stands upright. This is how the warehouse begins. Later, it is wedged into the tight rooms of a city, a city where the horizon pulls in like a hem, and the buildings stumble, inadequately, upward.

It is here where the girl first faces her storehouse, small as it is, but promising. She unclamps the latches and thinks of her grandmother, whom she never knew. From the trunk, she hopes, her heritage will spin open.

* * *

Under the umbrella of *Creative Writing* gather the genres of fiction, poetry, drama and creative non-fiction. In high schools and colleges, the personal essay (imaginative non-fiction) and the "research" or term paper are the most solicited forms of student writing. The skills of personal expression and data presentation become the focus for thinking critically about knowledge and experience. The personal essay is a predictable heirloom in the ancestry of rhetoric at nineteenth century British and American colleges. Philologists used oratory and rhetorical models for students to imitate in their quest for educated expression. The personal essay and the term paper are derivative counterparts of these, unfolding argumentation into more contemporary styles. Until the late nineteenth century, literature was not typically studied as a subject unto itself within the university; it was considered entertainment rather than a serious area of scholarship. Until the university developed its modern structure of departmentalization in the late 1800's, literature was studied through "the Greek and Latin languages and…rhetoric, oratory and forensics" (Graff 19). Young lyricists worked as apprentices while the master poets centered their pedagogy on mimesis, instructing the aspiring writers to imitate the great poets, following traditional models of form. Even today, in Harold Bloom's ideal, young writers should learn the craft of poetry, fiction and plays by imitating literary giants rather than immersing themselves in the revelations of their own experiences. Bloom centers on the "canon" as a pedagogical wellspring. He perceives the role of the writing teacher as a provider of worthwhile models to students; this makes evaluation an easier task and it assures the continuity of a particular western literary tradition since "…poetry always lives under the shadow of poetry. The caveman who traced the outline of an animal upon a rock always retraced a precursor's outline" (Bloom 4).

* * *

The trunk, once opened, grows too small for its keepsakes. The frocks call to feathered hats and fur wraps; the books, fatigued by their Victorian relevance, long for others, more modern volumes, to nestle alongside. The little museum grows impatient, referring to objects outside itself, things it cannot hold. The girl collects more artifacts, in reverence for her grandmother. Roaming the bazaars and curbside shops, she fills her bags with dresser linens, silver handled combs. She is trying to crawl inside a life far behind her own. The trunk, as if in empathy, holds what it can, letting the dresses fold over the hinges.

The girl needs more space for her belongings. Her rooms fill. She wants to store her grandmother's relics, at the same time she wants to be among them, running her fingers over the stiffened linens. What brings her to the warehouse is a desire for order. What if she were to die while the trunk was locked away? Would anyone come to claim it? These thoughts drive the girl into a dark mood, the one her mother calls resentment, the one the girl suspects is brought on by helplessness. A warehouse, really, is dead space. It becomes the home for artifacts, some of which are never recovered. The girl knows that her trunk can't survive her protection; it longs for a twin, or a larger box to fill. She must find a new place for the chest, one that will display as much as it stores.

* * *

Certainly any particular creative process thrives on work in its discipline for inspiration, form and context. One cannot be a good writer without being a good reader, just as a dancer must learn choreography and traditional movements that evolve from dance's rich history as an art form. Mimesis is, however, only one window onto the possibilities that the arts offer novices; true immersion instills a sense of inquiry that reaches beyond imitation or facile reference. The ability to refer to past models is essential in any artist's development but as Elliot Eisner points out, "we possess another ability that goes beyond the ability to recall. It is the ability to manipulate imaginatively the images or concepts that we are able to recall. It is through the process of imaginative transformation that human beings are able to conceive what is not, but what might be" (*Discipline* 8). Using literature as a referent in learning to write is crucial to any writer's development. Reading other work nudges one's own muse. The key is to be able to manipulate the medium of language in new ways, twisting and revising what has gone before. This revision, or re-seeing, is what post-modern writers fixate upon, since myth and allegory are buried within us through the work of our culture. Jane Smiley's A Thousand Acres, for instance, is the retelling of King Lear, re-staged on an Iowa farm.

Still, the personal essay is the medium for most writing in high schools and colleges. Other forms of creative writing—poetry, fiction and drama—are rarely required, except in specialized courses that isolate issues of craft. This essay, and the ones which follow, voices a plea for bringing poems, stories and plays into the repertoire of student research, and into creative strategies for synthesizing knowledge. All college students take composition courses, and all high school students must produce expository essays which evidence their learning. Yet, this is a limited focus. The forms and subtleties of the other imaginative genres offer great possibilities in scholarship.

In a sense, creative writing itself might represent all arts and their creative processes. Instead of neglecting a variety of writing styles and genres in the learning process, writers and teachers could benefit from placing creative writing, along with a diversity of arts, at the center of our curricula as a potent method of gathering material and assembling imaginative inquiries.

* * *

As she thumbs through directories and scans the streets, the girl settles upon a few options. She will find a warehouse nearby where she can leave her grandmother's trunk. It will be a place she can visit, a place where she can bring other momentos or retrieve her grandmother's things. There is no loneliness like the one she feels when she thinks about this. She looks at her rooms. A small hat stand blooms with coats and scarves; her tiny kitchen overflows with spice jars and copper pans. Above the bed, clothes spill from shelves, and books caught half tumble, lean their stacks into her. Her trunk is overtaking her rooms. She brings home more trinkets: souvenir spoons from worlds fairs, tiny crystal vases, doilies ironed into the texture of cardboard, vintage shoes—all these things remind her of her grandmother, a woman lost soon after her voyage.

How did the trunk reach our heroine? When she moved to her little apartment, her mother sent it to her. Inside, a note instructed her to care for the belongings, and to watch for dampness. "Don't let these things get wet," her mother's scrawl insisted. "They are old and they can't take much more." The girl, feeling the weight of heritage and the pinch of her own life wanting to push open, tries to be reasonable. She stirs her tea, and vows to fill the trunk with her grandmother's little collection, and the heirlooms that she herself has gathered from the city. "Any collection needs new additions for it to thrive," she thinks.

* * *

To some educators and parents, storytelling, playwriting and poetry feel frivolous: creative writing, along with the arts in general, bears the tinge of therapy. As Elliot Eisner claims, "there is a long tradition in Western culture that regards the arts as matters of emotional catharsis rather than matters of mind" (*Discipline* 11). Most people think of writing poems as an adolescent activity in which one records dramatic emotional surges. Though poets and fiction writers hold teaching positions at every major university, imaginative writing is still viewed as a passing fancy or folly of extended childhood. "Serious" books have either been written in the distant past, or by working writers who have created hermitages far from academia. Because creative writing aspires to make-believe accounts over factual ones, the truths of novels, poems and plays are easily dismissed. The demands for writing after college do not typically involve fiction or poetry. And in most professions, managers want their employees to write clear and concise prose, a skill not typically attributed to the poet or novelist.

But how do students learn to write lucid, thoughtful prose which describes, recounts or argues for a particular point of view? Doesn't imagination play a role in stretching one's ability to perceive a variety of perspectives, and to articulate them? Where, in the end, might we learn the most varied elements of style? From imaginative writing. When students learn to write dialogue, for instance, they are learning to capture how a character speaks. In doing so, writers have to listen more carefully to those around them. By listening carefully, writers develop a heightened sense of the surrounding spaces in which they circulate. Quoting people is a valuable device for the toolbox of stylistic strategies, and learning how to listen, and how to record, or imagine, the words of others has a powerful effect in all kinds of writing. Or, in another realm, learning to condense an image or impression is one gift the poet can give to the prose writer. Patricia Hampl calls poetry "the richest form of language because it is the most concentrated utterance" (197), and this concentration helps writers learn to edit, and to essentialize at the same time they infer a wealth of new information from the utterance itself. Poetry is, as Hampl continues, "both immediate and ancient" (197); it looks for the unpredicted truth, the surprise within the obvious. Poetry can help all writers look more closely and articulate more deeply, more succinctly into history, memory and as well as into matters of the human heart.

Personal essays do offer many similar attributes, and, in form, they closely imitate the kinds of writing one might engage in over a lifetime. The autobiographical texture of personal essays, though submerged in the plainness of a non-fiction format, is as close to "creative" as many teachers or students want to relate. Since personal essays are based upon rendering detail from memory, and linking those details as closely as possible to a personal truth, they relay factual events through a narrative. In the end, the narrator of a personal essay usually aspires to witnessing events, but is implicated, by her own nosiness, in the evolution of a fiction. This is wonderful material, and quite similar to the effects a poem, story or play might have. In the long run, creative writing may, unlike personal essays, reach further into the terrain of invention, provoking the narrative into new forms. Loren Eisley's non-fiction essays, for instance, transcend the personal; the narrators become witnesses to an inquiry, even as they are immersed within it. In Night Country, Eisley's narrator rehearses possible outcomes as he explores caves and negotiates archeological digs. The narrator's choices map his creative process as both a scientist and as a writer. Though he is steeped in scientific inquiry, Eisley's investigations are essentially artistic. Like Lewis Thomas' Lives of the Cell, this genre of prose is more holistic than personally expressive or sentimental: these essays explore unknown terrain at the same time they explore the inner workings of the narrators themselves.

Creative writing, despite our impressions, does not have to emerge through therapeutic confession. But the essay, as a medium, feels useful, industrial. Directly, it can address issues, stylize arguments, and present facts. Essays comprise the most "readable" forms of writing in our culture. With the advent of Wolfe's "new journalism" and the memoir as emerging forms of creative inquiry, the bulk of creative non-fiction has grown tremendously in the last twenty years. Annie Dillard, Toni Morrison, Jamaica Kincaid, Henry Louis Gates, and Susan Sontag all employ creative techniques in their rich layers of narrative account. Each of these writers is also gifted in more than one genre. Becoming a flexible, strong writer demands testing out forms, and generating more associative links than a wide readership typically employs. Students need a variety of reading material to learn deeply, and they need to participate in the construction of a wider range of genres to become more flexible, capable writers and readers.

Even if an essay becomes a final *product* of a bulk of research, imaginative writing may ignite the process itself, thus enriching the journey. At the end of some investigations, a novel may be the most appropriate form to synthesize an inquiry. In other cases, a poem may mesh imagery and rumination into a deeply philosophical expression of relevance. In plays, dialogue carries the plot along with complex psychological turns. As John Guare's play "Six Degrees of Separation" illustrates, drama can explore a real life incident, while language thrives on innuendo to reach beyond simple conversation. Or, think of the first lines of Marianne Moore's "The Steeple Jack," in which the speaker translates the apocalyptic landscapes of Durer into a small, more familiar town:

Durer would have seen a reason for living
        in a town like this, with eight stranded whales
to look at: with the sweet air coming into your house
on a fine day, from water etched
        with waves as formal as the scales
on a fish. (5).

Moore's poetry focuses on the minimalist, treasuring details. Her poems feel like animated museum exhibits: accurate in their placement, but lively and investigative. Nobel Laureate Seamus Heaney says that poetry "is the imagination pressing back against the pressure of reality" (1). It is through Plato that Western civilization first uses poetry as a counter-argument to the rationality of existing political conditions. Here, in the imagined visions, we begin to see what is possible. As Heaney notes, poets are "concerned to conjure with their own and their readers' sense of what is possible or desirable or, indeed, imaginable" (1). The challenge is to read well as one creates, and this means reading the outer world along with the inner one, testing the appropriateness of ideas and provocations within the imagined space.

* * *

The girl's wanderings draw her to closed doors, soot-dusted windows and the worn breath of machinery. At first, the girl simply wants to store her grandmother's trunk, her little museum of heritage. But the warehouse is submerged in a part of the city she has never visited. These streets are unfamiliar, though not far from her walk-up. Her feet quicken on the cobbles. Overhead, steam filters through the seams of boarded windows.

A man points to the next block. "Storage is down there," he says. Though she craves to know the building before she reaches it, the girl tries to be patient. The wind wraps her back, and the lost storefronts frame a corridor of eye-level vacancy. The numbers fade, and she arches forward, heading though the abandoned intersection, looking for signs.

What the girl sees: how objects retain their edges, how they flow from one to the other, how they all help her understand her own past, even the ones that her grandmother did not collect. In her apartment, books rub against her hands; her eyes follow the patterns of pedestrians below her window. She learns to walk with anticipation instead of fear, and she counts the blocks, notes the places she might explore later.

And, she brings the scent of wind into the warehouse with her.

* * *

To be imaginative is to be resourceful, to create opportunities. Imaginative people see spaces in the impossible; they pry open the inconceivable. Social workers find homes for neglected children. Agile business people turn broken deals into assets. Firemen enter burning buildings and rescue victims. Faced with the overwhelming task of educating children, teachers work day by day, problem by problem, to help students learn skills while at the same time introducing them to the complexity of our cultures. On the surface, such undertakings seem monumental, but little by little, imagination repairs the world. The splinters of experience build the whole of our lives. Making use of innovation and inventiveness is crucial to the resources of thought and action. As Bronowski, the social anthropologist, notes: "The act of the imagination is the opening of {a} system so that it shows new connections" (109).

Creative writing is by nature resourceful, inspiring new connections: it draws on intuitive, cognitive and technical abilities, and it opens spaces for alternate visions to exist. With imaginative writing, we can create what Maxine Greene calls "as-if worlds," landscapes where perspective becomes a lens to isolate and magnify what we cannot see in our own surroundings. Not only do writers create frameworks for ideas, but language itself enriches the material they collect. In the context of an exploration into science, math, history, film or architecture, a young writer has material beside herself to draw from, thus pulling her away from writing only about her feelings. Writing fiction, poetry or plays offers a unique version of research, inquiry by imagining possibilities—not research in the ordinary sense of answers sought and answers found. By inventing an imaginary context in which to place a science experiment or geometry problem, a student can see new possibilities in the course of study and in the world itself. She can understand the evolution of a problem or experiment more completely when it becomes part of her own creative process. Along this spiraling, overlapping journey, a Kantian vision of perception emerges: it is intellectual, emotional and physical, and the choice of apparatus is crucial to the state of the world one constructs, and to the fate of the common world we all try to create.

Jerome Bruner, psychologist and educator, puts it this way: "Education must also seek to develop the processes of intelligence so that the individual is capable of going beyond the cultural ways of his social world, able to innovate in however modest a way so that he can create an interior culture of his own" (Knowing 116) A poem or story, too, constructs an interior culture of its own, and by inventing one, novice writers learn the intricacies and craft of the architecture at hand. The invented space on the page becomes a blueprint, of sorts, for a particular mental activity: an inquiry and the simultaneous construction of knowledge. As we write, paint, dance or play music, we create knowledge; in a phenomenological world, claiming knowledge becomes increasingly based upon image, the building blocks for any art form. New kinds of understanding become more accessible when we are forced into new spaces. Imaginative activities provoke these spaces to open, urging us inside.

Each of the arts provides a "way we have to articulate our internal world to ourselves," as philosopher Michael Parsons asserts (51). To build a world and fill it is a complex task. Since the outer world "is not transparent to us, not self-interpreting…we must interpret it, five it some articulate shapes; and if these shapes are to remain faithful to the inner life they represent, they must be continually reexamined and adjusted" (Bruner, Knowing 119). In this negotiation, the skills of writing and reading merge. By producing a text, we are reading in a new way and writing a new world into our interior landscapes. This dialogue between the interior and the exterior creates profound results: the writer's inner landscape of thinking shifts, changing the poem or story in process, and the vision of the outer world shifts, in response to the new image or artifact.

* * *

Of course, she had imagined neat rows of trunks like hers, with little round tags hanging from the leather strapping, all aligned with the regularity of a morgue's cabinets.

Instead, the girl finds herself in an anteroom, facing a plastic-sealed wall. She notices a smattering of little holes in the plastic, about waist high. "I want to store something," she says, bending to the little airway, as if it were a target, shot at so many times, and missed.

A man, blurred there behind the smudges, says, "Well what kind of storage do you want? Locker? Three by five, seven by nine, nine by twelve? Open shelving? Garage space?"

Suddenly, she is not sure. "Can I look at the space?"

"Which one?" the man demands.

Such negotiation transforms her trunk into something she can no longer imagine. The girl has to go home and rest. She will think this over.

One day, she returns, propelled into the building. She wants to explore. The guard again asks her what she wants to see. She asks, "Well, what is there to see?"

The guard laughs. "What you see."

"Well then," she says. "I want to see it."

Down dark rows, the guard guides her with a flashlight. Heavy wooden ladders straddle the aisles. The girl catches glimpses of old paintings, photographs, stacks of papers, two old dolls, tumbled sideways in chin-to-chest nods, flags and snow globes, a ripped kite, a croquet set with a cracked stand and only three balls. "What is this section?" she asks.

"Family memorabilia." The guard pauses, and looks to the girl. "Perhaps your items belong here."

Perhaps.

* * *

"Education must, then," Bruner continues, "be not only a process that transmits culture but also one that provides alternative views of the world and strengthens the will to explore them"(Knowing. 117). If one were to funnel down this process of transmitting culture and exploring possibilities, its essence would be in the power of the creative process to uncover choices. "In the arts," Eisner suggests, we "must rely on that most exquisite of human intellectual abilities—judgment" (*Discipline* 10). Writing demands making a set of context-driven judgments, and good teachers help their students negotiate strategies for building narratives.

Teachers make choices, just like writers do. In a course that explores urban archeology, for example, a teacher may have to guide a student away from physically digging holes upon public property, opting instead to create an imagined "dig" based on available artifacts and information. Along similar lines, when one investigates homelessness, it may not be in the best judgment to send students out to interview transients. Instead, the young writers might assemble information from service agencies, books, maps, city records—sources which do not endanger the dignity of the people involved. In writing, one makes choices about how to use material and how to credit it accordingly. These are all opportunities for pedagogical judgment, and for the development of an ethos in the process of writing and researching. In the machines of curriculum that develop, teaching priorities are institutionalized.

But many high school and undergraduate teachers have neglected the power of creative writing; after middle school, it typically becomes an "elective." According to the course offerings of most high schools, we must, it seems, outgrow imaginative writing. Yet working writers don't transcend imaginative writing; why should emerging writers? Colleges and universities, too, tend to isolate creative writing into "programs" or into small annexes of their English Departments. Yet, creative writing is where one finds the best writing available in our culture. Why do we leave it behind as a vibrant method of learning or as a serious form of inquiry.

For many teachers and students, creative writing is expressive writing, a vehicle to unload one's feelings. Creative writing can also become a method of research, a way of using perceptions and intuitions to find out more about ideas and events outside our interior cultures. Like all engaging, sustained research, creative writing is not a linear process. It is an circuitous, overlapping, irrational route, as Merleau-Ponty notes:

> The idea of going straight to the essence of things is an inconsistent idea if one thinks about it. What is given is a route, an experience which gradually clarifies itself, which gradually rectifies itself and proceeds by dialogue with itself and with others. Thus what we tear away from the dispersion of instants is not an already-made reason; it is, as has always been said, a natural light, our openness to something (21).

The webs of imaginative space and real space are complex, and choices within these zones are based on judgment and inquiry. There are value systems that drive decisions. Teachers, as working writers, are crucial in addressing such dilemmas. It takes some time with language for a writer to encourage and support the revelations it offers, and then to apply it to her present. A good teacher helps to sustain the inquiry.

* * *

How would she have known that the anteroom would bloom into openness, that the shelves would tip their wares to her?

"Let's stick to the facts," she thinks. "I am here to place my trunk in the care of this warehouse, yet each time I return, the warehouse has changed. The more I learn about my grandmother, the more I learn about the complexities of storage, the less sure I am. Each time I come here, the items shift. They become more familiar. Deep in the recesses of the aisles, though, I find new things. I need to know what my items will be next to. I need to know where they will fit."

As she turns a corner, at the end of one of the aisles, our heroine sees another young woman, perhaps her own age. The stranger tilts her head, as if she were looking into a mirror. "Hello," she says.

"Hi," says the girl. "Are you storing something here?"

"I'm just looking at some stuff that belonged to my parents."

The girl squints and looks at the stranger's rough trousers and half-tucked blouse. She looks like a girl who is no longer under her mother's influence. On a clouded winter day, this new visitor had chosen to browse the warehouse, just as the girl had.

"I know where there are some amazing statues," says the stranger. "Want to see them? They look like they should be in a big fancy garden or something."

"Well, okay." The girl follows her new storage companion into the aisles, turning into ones she has not ventured down before. At the end of a row lined with lawn mowers and power tools stand a group of life-sized cement figures. Pushed together as they are, the statues look alive, huddled in the shadows over some mysterious transaction.

"Where do you think they came from?" asks the stranger.

The girl pulls nearer. As if fearing to be overheard, she whispers. "Are they old?"

For the rest of the afternoon, the two move through the warehouse, looking and jotting notes. They admire each other's belongings. They ask answerless questions and peruse the storehouse. Later, they leave arm in arm.

* * *

When a young writer suspends intent, her language reveals. By putting aside the internal editor, the voice who demands immediate coherence, she can use heuristic procedures to create an initial bulk of writing through observation and intuition. If she generates enough prewriting, enough loose verbiage in response to something, she can sort through it, make choices, and develop it into a working piece. Seeing peripherally, keeping the process open to useful distraction, helps the writing become more varied and animated. By collecting details, as Donald Murray suggests, a writer can synthesize generalizations by analyzing the details themselves, letting the writing process unfurl a wealth of possibility. This opens the opportunity for the writer to make more sophisticated assumptions through the process of writing itself, instead of collecting data to support a pre-conceived agenda. In fact, finding support for one's initial intent may explain why confessional writing is often so abstract. It conceals specificity by generalizing too soon, without adequate detail. It wants to shroud its hodgepodge of unnegotiated feeling. The outpouring remains fixed in the "collecting" stage, paralyzing its opportunities for expansion, clarity and relevance to an outside readership.

One of the common hazards that inexperienced creative writers face is the tendency to rely on abstraction and melodrama. Imagination should outweigh pure emotion in the pursuit of effective writing. To invent, rather than to confess, means that a writer has to create clear imagery, construct provocative metaphors and imagine an alternate reality. As a result, students' writing grows less abstract and more animated. Invention opens up stiff syntactic constructions because, as William Stafford says, "a writer is no much someone who has something to say as he is someone who has found a process that will bring about new things he would not have thought of if he had not started to say them" (17). Language, like paint, encourages a dabble in the medium, and from this some of the finest writing is born. Many useful writing exercises reduce words to building blocks from which innuendo accumulates. Language is a life-long medium; it is a source of discovery and insight into oneself and one's culture. When students learn how to generate and sustain their own work in a variety of situations, their relation to the world becomes more intimate, and their imaginary worlds more lively and available to the complexities of reflective reading.

However, after middle school, most American students engage in very little creative writing. Poems and stories are read and "interpreted," but few are created. In search of scope and rigor, most curriculum pushes imaginative work to the outskirts. Arthur Applebee's nationwide research on writing in American high schools found that only 8.2% of ninth graders and 7.2% of eleventh graders do work that involves writing stories or poems (Moxley 28). This is a dramatic decrease from the imaginative writing undertaken in most elementary and middle school classrooms. James Britton, perhaps our most influential contemporary language theorist, found that creative enterprises significantly diminish as students proceed through school (Moxley 29). Essays and term papers are the norm for academic writing in high schools and in liberal arts programs. Ironically, at the graduate level, M.F.A. programs in Creative Writing are growing at unbelievable rates. The Associated Writing Programs claims thousands of members, and lists hundreds of college and university programs in creative writing. This kind of attention to creative writing is filtering through the culture, but high school and college programs are not preparing students to become strong imaginative readers or writers, nor are they using the possibilities of creative writing as a discipline of inquiry. Imagination, as a guiding force into other areas of study, withers within the tension between context-less issues of craft and personal experience.

* * *

The girl feels torn. Her visits to the warehouse grow more frequent, and she has less time to collect new relics and to arrange her apartment. Some days it seems as though she spends more time in the storage place than in her own rooms. What draws her there is the stories that she hears; her friend tells stories about her parents, how they met, and lived in a little room above a pharmacy.

"The funny thing about some of this junk is that it helps you remember stuff that happened when you weren't even born," her friend said one afternoon. "It's like you look at all of these things and they start to feel like someone's life."

When the girl looks through her own little figurines and tableware, she gets a glimpse of her grandmother. It is possible that she, another woman in another time, like to arrange things, and set up little luncheons for two, all in the hopes that she would share it with someone. The more she makes up, the more real her grandmother appears.

* * *

To sweep creative writing back into the center of curriculum after middle school acknowledges language as the imaginative force that ultimately shapes education. Placing an artistic endeavor in the midst of other, more traditionally "academic" explorations serves as a model for all of the arts to inspire multiple perspectives in learning. Still, what about those who do not feel linguistically talented, or, in the case of other arts, those who do not feel creative in general? Many people do not feel artistically gifted. However, Eisner describes education "as a process aimed at converting potentiality to actuality" (*Discipline* 14). Skills in the arts are developed just as they are in other fields, as Eisner points out: "complex and subtle skills are seldom acquired in single settings. They require time, repetition, exploration, and continuity of effort and practice"(*Discipline* 14). For teachers to help students develop the abilities inherent in all learners demands attention, time, and multiple viewpoints. Developing the creative process through collaboration and personalization is an ongoing pursuit of inquiry. Imaginative writing can open whole passages to learning, as it inspires confidence and flexibility. In a dialogic curriculum, for instance, students can gather the knowledge and viewpoints of others while pursuing the exploration at hand. Receiving assistance from classmates becomes essential. It is analogous to making a map that is appropriate for a particular use. The terrain itself may not change, but we learn through the suggestions and needs of others what aspects of the mapping might be emphasized. Should the topography be highlighted? The road system? The waterways? What should the scale represent? Collaboration provides support, and the gateway reduces the anxiety of writing a piece on one's own. From a social, interpretive community, writing blooms into a democratic act. The piece is not "written" by all, but a group has the power to influence its "writtenness." In other words, bashful writers can be encouraged; they can learn generative approaches and find the bravado to pursue them.

Howard Gardner's "Theory of Multiple Intelligences" assures us that there are fewer distinct, closed portions of knowledge, and that our abilities are interconnected. Placing words on a page can be a form of linguistic intelligence just as it can be one of spatial intelligence. Linguists tell us that meaning is ultimately derived from one's perception of space. Words can operate like the complex parts of a model, or like the mystic's dream-spun articulation. "The creation of powerful and sensitive images is a matter of mind," according to Eisner, "a matter that requires inventive problem solving capacities, analytic and synthetic forms of thinking and the exercise of judgment" (*Discipline* 11). Good teaching follows this artistic model of creation. Teaching helps to integrate diverse intelligences while honing issues of craft and ethical choice. A classroom, really, is a gathering of intelligences. To consult, support and interrogate different kinds of work takes different talents, and under these talents prosper different inquiries. It may take multiple teachers, with different talents to encourage students in the multi-faceted dimensions of their work.

Though much research has been conducted on the teaching of composition, little has been conducted on the teaching of creative writing (many books offer exercises without theoretical frameworks), and very little attention has been given to how imaginative writing can be used to explore other disciplines in high school and undergraduate classes. Though many math and science courses now use journal writing as part of the process learning wave, very few look to poems and stories as ways to gain insight into technical matters. In Einstein's Dreams, a novel by Alan Lightman, for example, the theory of relativity is built through fictional slices. Some students work well with this narrative approach to understanding physics. By generating their own fictional accounts based on Einstein's work, they would be even better equipped to understand the theory of relativity and the human dilemmas surrounding Einstein's own creative process. A student who understands physics can use her spatial intelligence about the subject and bring that into language. Language, like a model, can become a three dimensional exercise in form.

Wendy Bishop, Arthur Applebee and Joseph Moxley have all conducted excellent research in the teaching of creative writing, and offered outstanding insights into the teacher's role as instigator and collaborator. Bishop, Moxley and Applebee research the need for specific attention to the teaching of creative writing. They all consider the effectiveness of creative writing's most common pedagogy: the writing workshop, a structure that dates back to the last century. The University of Iowa institutionalized the workshop in 1936 with the introduction of its graduate Writing Workshop, a core of programs in Creative Writing. The pedagogical techniques of the workshop have changed little over the years, as Katharine Haake describes in "Teaching Creative Writing if the

Shoe Fits" (77). The workshop is centered on a mentor writer who offers critical feedback to repair poems or stories. Instead of embracing the choices of a creative process, typically the writer-teacher isolates issues of craft. Though this may be valuable at the graduate level, other difficulties arise with less experienced writers. In fact, the lack of attention to the intricacies of teaching imaginative writing establishes deficits in the literature classroom, since literary terms and applications are more difficult to learn when one does not try the techniques that established writers use. Hands-on, experiential learning is essential to understanding science, and it should be given similar attention in the discussion of novels, plays and poems. By learning to ask "How did this writer create this effect?" or "How might he or she have chosen this particular strategy?", students can see how literature is structured, how it forms rich myriads of imagined worlds. In M.F.A. workshops, the goal is publication, and this pressure often shuts down dialogue about possible choices within the creative process, opting, instead, to critique choices already made. Workshops tend to produce "stars" along the way. Instead of telescoping attention to particular stars, or to the teacher at the center of this activity, the endeavor of learning to write ought to be directed to the entirety of the heavens. All of the dilemmas of a particular writer's collecting, forming, problem-solving, ruminating and revisiting need to surface as a viable topic in our classrooms, and all students need to be valued for their writing as well as their collaborative practices.

The workshop is a false model of democracy. Instinctively it says, "All of the participants are valuable. We all collaborate to improve each other's work." Yet, with the mentor writer at the center, most workshops end up writing to the middle, and trying to please the leader. Each student is like a spoke to this hub. But there is no outer rim, no sense of larger inquiry to connect these spokes. This wheel, ultimately, cannot roll. Of course there are successful workshops, and teachers who are agile enough to step out of the way and encourage the sparks and cries of the working process itself. The dialogic curriculum foregrounds collaboration, and the constructivist model instigates research through essential questions, generating exploration. In many cases, however, the workshop implodes, draining personal needs to the center instead of moving outward into imaginative concerns. Without treating the writing classroom as a studio, a place with a variety of tools and activities, students turn inward with their work. Again, this brings them to personal expression instead of to inquiry into other realms. How students learn to generate, sustain and wrangle with the dilemmas of the process is rarely discussed. Most workshops are the homes of clever mechanics. We may never fully learn the secrets of the masters: they fix the problems without showing their proteges the brilliance in the flaws, the possibilities for further exploration, and new webs of choices.

* * *

Will she fall in love? Will she be pleased by what she finds there? Like her grandmother, the girl has come to a new place, hoping for companionship. Her visits with the stranger have brought her into these wonderings. In the dark warehouse, she sees the light rooms of her grandmother, and the loveseat where couple above the drug store sit each evening. Their lives burn with nostalgia.

The girl is dizzy with the shelves, the jumble of rulers, stethoscopes, barometers, loose pens, measuring cups, electrical cords, shoe horns. Nothing, in this part of the warehouse, is labeled. Her legs thicken and her eyes slip. She curls in a long abandoned chair, her notebook sliding from her knees, and she sleeps.

* * *

Creative Writing offers the best stylistic and technical examples of strong, varied writing. When students turn to fiction, creative non-fiction, poetry and drama, they find a range of techniques with which to construct and sustain essays, letters, lab reports and personal reflections. Imaginative writing informs historical and theoretical writing, and when students practice their own versions, they learn how good writing is put together, how the architecture of their work can be improved.

Investigating other disciplines can too often be a closed series of encounters. The post-modern channel-flipping of student lives, rushing from math-to-science-to-history-to-art-to-English, needs some common thread of inquiry. We've all heard about writing across the disciplines, but what this research proposes is to write through the disciplines. To use poems, stories and plays as models to discover more about math, science, history and the arts means putting these disciplines into creative contexts, contexts created by the students themselves. This process is as important as the creative products it will generate.

Through the collision of imagery and idea, the revelations are spaces opened, new possibilities of learning and discovery. For a synthesis of complex ideas to occur, engaging, ruminating and problem solving must play a role. Though stories, poems and plays open possibilities, they still have imposed structures. It is the dialogue between the structure and the interior issues of research that tip the ideas to us, and allow us to rummage through them.

In a media-driven world, the basics of academic inquiry are shifting. Educators, legislators, parents and presidential candidates all argue over what students in America should know. They pay little attention to how students should come to know what they know, and many have little respect for developing holistic research techniques over the memorization of facts and isolated visits to the library. Research inspires images of dried paste, yellowing pages, and hours spent in musty rooms. Though we now have more methods of research available than ever, "standards" circle the target to which legislators and reformers aim. The standards movement bears the language of suffering: students should "conform" to standards; standards should be "rigorous" (rigor inspires the image of metal spines snapping upright in the bodies of children); standards "must be met," and "American children must have a jump on standards," as if with the luck of a passing train.

It is promising to see smaller schools proliferating, ones which focus on "habits of mind" rather than upon factual mastery as evidence of student learning. Deborah Meier's Central Park East in East Harlem and Ted Sizer's Coalition of Essential Schools are inspiring models of student inquiry. For these schools, learning is less about rigor and more about persistence. In the working world and in the world of academic study, people have to "walk around" a problem until they see an opening, a sliver to pry through. Real inquiry is more about what the Japanese term *gambura* implies (coined for use in education by Fred Dust, Head of the Bush School): a persistence that involves the whole self, rather than mere memorization and linear logic."

* * *

A man rolls the trunk from its resting place, heading into another part of the warehouse. As she walks along side the trolley, the girl holds the trunk's open lid and points to the aisles. "Turn here," she says, tilting her head in the direction of a row of heirlooms and spilled flea market trifles. "It can rest here, in this space."

The trunk stands upright, and the girl opens its latches. She imagines her grandmother checking her things, standing the trunk on the docks, with the breeze of a new land catching her skirts. The girl lays the dresses and trinkets over the lid, and looks through the heirlooms. Next to her trunk are the shallow boxes of her friend's keepsakes: a flattened uniform of her father, the lackluster pearls of her mother. Somehow, these treasures glow with adjacency, as her own belongings and her friend's should mingle there.

In a way, the girl thinks, all of the keepsakes belong together. Through the stories they tell each other, the girl and her new friend have made a new family out of their isolated ancestries. The girl vows to visit the trunk and boxes, adding and retrieving whatever she needs. Already, her grandmother's life becomes more lucid, emerging from the haze of the past. She is bringing them back to life, this time back to her own.

* * *

Neil Postman's and Charles Weingartner's book, Teaching as a Subversive Activity, published over twenty five years ago, re-ignited John Dewey's notion that "in every integral experience there is form because there is dynamic organization…The organization is dynamic because it takes time to complete it, because it is a growth" (55). For Postman and Weingartner, the growth of dynamic organization in learning is through "the inquiry method." Growth, in this version of learning, does not come from teacher-imposed "rigor" but from the student herself. To explore a web of ideas "activates different senses, attitudes and perceptions; it generates a different, bolder, and more potent kind of intelligence" (27). When one becomes deeply immersed in the process, the inquiry itself mixes with the subject explored. As Postman and Weingartner describe it, "learning is a happening in itself" that helps "increase the competence of learners"(29). Dewey, perhaps Postman's greatest influence, described the process this way:

> "Material is ingested and digested through interaction with that vital organization of the results of prior experience that constitutes the mind of the worker… Experience, like breathing, is a rhythm of intakings and outgivings. Their succession is punctuated and made a rhythm by the existence of intervals, periods in which one phase is ceasing and the other is inchoate and preparing….The form of the whole is therefore present in every member. Fulfilling, consummating, and continuous functions, not merely ends, located at one place only. An engraver, printer or writer is in process of completing at every stage of this work. He must at each point retain and sum up what has gone before as a whole and with reference to a whole to come (55-57).

But the creative process is not as clean as the "completing at every stage" that Dewey describes. Postman and Weingartner point to "question asking, defining, observing, classifying, generalizing, verifying and theorizing" as components of the process, noting that "the inseparability of language and inquiry is obvious" (37, 115). What seems to be a dilemma of language may be a dilemma of the inquiry itself. In turn, a dilemma in the inquiry may be partially resolved through language.

Research, by its nature, is full of dilemmas. Within these live the possibilities for the alchemy of true learning. But there are hazards of research that require a teacher's profound ability to help students make good choices. Wholesome research offers a repertoire of strategies to enter unfamiliar material. Research is active contemplation. The composition theorists, particularly Donald Murray and Peter Elbow, offer insights into the early stages if collecting. They break down some of the mystery inherent in the creative process. Students themselves offer fresh perceptions, visions of what it means to live in a particular present. Students produce their own language. And, at the risk of factory metaphors taking over and thrusting us back into an industrial model of schooling, let us say that students also produce meaning, and collaboratively, they produce a stronger meaning. It is not an assembly line, but a room of experts all fiddling with the product at hand. This is not Dewey's model of progressivism which directly serves an industrial society; rather it is a model of developing Postman's and Weingartner's "condition of mind" and Deborah Meier's "habits of mind," qualities which serve a culture of thinkers and questioners—not workers who imitate the tasks of machines.

Postman and Weingartner embrace inquiry as a series of uncoverings, unravelings, and choices. "Most human problems require us to make choices," they claim, and "this is a much more rigorous process than making a decision. We have to include more, recognize more, consider more, and provide for more—of everything....Anything different from what was expected is 'admitted' into the system"(117). Piaget's notion of learning as a process of assimilation and accommodation points to the "system" Postman and

Weingartner describe. Learners, as part of their process, must admit the information into their frameworks of inquiry, thus revising the frameworks, and what Dewey labels the “dynamic organization.” The best initial frameworks are, for learners, plastic and flexible.

* * *

One morning, the girl finds a book and brings it to the warehouse. It has pictures of cut glass vases, tiny lamps, china figures, and other collectables one might find in an old house. The girl thinks the pictures are beautiful. “Look,” she instructs her friend. “These are just like some of the things we have seen.”

Her friend nods. “Are they worth anything?”

“I just like them.” The girl points to a crystal candy dish. “Mine is sort of like that one—don't you think?”

“Yeah, it is.” Hey, look at these dates. Is that when your grandmother was living?”

From the pictures, the two girls imagined a wealth of furnishings, a place where her grandmother dusted and lived to be old. But life, they knew, was not quite like that. Somehow the girl's grandmother had managed to give birth, and then to disappear almost as quickly as she had arrived, leaving her trunk and her young child.

* * *

Just as the house and the living cannot be separated, language, as a route, can hardly be separated from its discoveries. To suspend judgment and to write into new contexts means unlearning fixed paradigms and shuffling them for the benefit of both vision and truth. This makes language more organic, arising from the exploration, and it inspires the exploration to bend to the language at hand. Revision of one may unravel and remodel the other. The inquiry and the language used to pursue it are response-driven, ongoing, and headed spiraling toward product. When a student is persistent in thinking, engaging, reconsidering and problem solving, she opens up possible strategies to dilemmas, both narrative and poetic as well as ethical. This is an important series of stages in generating synthesis. The project at hand must relate back to its guide, and the guide must see a place in the social framework for the project.

But how does creative writing as a form of inquiry find relevance in a larger social context? First, by writing poems and stories, students are connecting to literature of the past, and in many ways, letting their own creations be influenced by work that they have already read. This gives nascent writers some insight into the complex issues of craft, and anchors them in a *present* that affects their research in marked ways.

Second, young writers can benefit from writing commentaries about their stories and poems. A reflective commentary should accompany all creative endeavors, not to privilege linguistic intelligence over others, but to offer the student and her viewers other kinds of access to the project, and to account for choices made within it. These commentaries should outline not simply the dilemmas that the creative process has posed, but how the decisions the writer has made are reflected in the craft of the final piece. The dialogue between the artistic piece and the commentary provides a metaphoric construct of two things compared, and can inspire critical thinking and reflection on the work. It has these following possibilities:

- to separate the student from her work by giving an aerial, critical view of it;
- to create a meta-awareness of the choices she has made in the process;
- to use the vocabulary of the craft at hand and the language of expertise within the field of inquiry;
- to identify mastery and spaces for more inquiry;
- to place revision within the fabric of creating itself;
- to learn more deeply about literature (or any medium that is the subject of the inquiry);
- to establish the arts as a varied and complex arena, suited to a variety of purposes;
- to constitute research as an art, thus inspiring art-like techniques;
- to increase the "competence of learners" (Postman 31).

Postman and Weingartner summarize the opportunities in the inquiry method by claiming that learners "are more persistent in examining their own assumptions; the use of definitions and metaphors {become} instruments of their thinking and are rarely trapped by their own language" (32). A writer or painter can gain confidence as a thinker by utilizing two structures of expression.

The third way to find relevance is to connect these poems and stories to other poems and stories within the community. Exhibitions, presentations, dialogues and submissions are all vehicles to connect the stories and poems to the larger machinery of study and of relevance. Theodore Sizer's Coalition of Essential Schools provides a working model of presenting material to larger communities, as well as within one's own.

* * *

"You may look at the collections from other cultures, but you may not try on the costumes," the security guard tells the girl. "Those items are sacred, not to be worn."

The girl wants to don the masks and parade through the warehouse. She wants to feel what it would be like to have a heritage different from her own. Instead, she stands behind the red ropes strung in front of the shelves and peers into the rows of items. The more she looks into her own trunk, the more she desires to look into the trunks and shelves of others.

"Vanity does not become you," says the guard. "These things are not yours."

The girl becomes curious enough to look, but not rude enough to wear the belongings of others.

* * *

Language works powerfully: it unites whole governments and dispenses opinions from its citizenry. One must navigate through the disciplines, creating one's own sense of cultural heritage, while respecting the various heritages of others. The arts provide a profound pivot for any investigation; yet there are ethical issues which any artist or writer must confront. How easy it might seem for a young American writer to create a story from the perspective of a !Kung Bushwoman. With the right articles and photographs, her life might seem easy to render by connecting "facts", photographs, cultural icons. But the imagination cannot hold up under certain presumptions. A writer always has to check the authenticity of her voice, and work against the desire to appropriate the lives of others. When she places herself in an honest proximity to the material, she must acknowledge what is within her rights to claim as a narrator. Wise teachers can guide students through such choices, helping young writers and artists understand that context is crucial to the rendering, and that one's narration conjures up ethical dilemmas.

To create new verbal structures that counteract bias, to reveal past frames of reference that are no longer revealing, and to revive the dead language of research while giving it new perspectives, all negotiates ethical and social terrain. If writers are to put their work to use in the social fabric of the culture, they must see the power of the word. Paulo Freire is quite articulate about this: "Within the word we find two dimensions, reflection and action, in such radical interaction that if one is sacrificed—even in part—the other immediately suffers. There is no true word that is not at the same time a praxis. Thus, to speak a true word is to transform the world" (75).

If the word has to be "true", doesn't that say something about content? Aren't there facts and trends which need to be recorded by students? How does creative writing allow for such content to thrive? Creative writing acknowledges distortion immediately. It says, "These facts are accurate, but I will use them in a context that will make them true." Truth, really, is about alignment. Imaginative writing offers a structure for ideas and factual accounts to be actively stored. After all, the historic ballad kept the memories of wars and royal lineages alive. Hemingway's stories bring realistic accounts of the Spanish Civil War into our living rooms, just as Jamaica Kincaid's novels underscore many of the "facts" of life in Antigua. A poem or a story is a salient structure that can uphold the demands of content, while placing them into the particularity that imagined contexts demand. Many contemporary poets, including Jorie Graham, Allison Deming and Alice Fulton have ruminated issues of science in their work, with an attention to the intricate nature of facts and hypotheses.

Like Dewey, Jerome Bruner describes the nature of knowledge as a dynamic structure: "Knowledge is a model we construct to give meaning and structure to regularities in experience….For it is structure, the great conceptual inventions that bring order to the congeries of disconnected observations that gives meaning to what we may learn and makes possible the opening up of new realms of experience" (Knowing 120). Negotiating a structure is part of the creative process; others call it revision. Students are often resistant to "revising" their writing. Actually, this is quite understandable. Essays burdened with red marks come back to them, and any writer must have a flicker of embarrassment and a desire to "fix" the errors and put the whole piece to rest. But embarking on a longer creative process, one which is not *corrected* but *encouraged*, one in which choices are faced with bravado and reason, demands more than tinkering with mechanical problems. It involves looking at the whole system of the exploration and the poem or story as representative of that, as well as a separate piece of art.

The unconscious has always been romanticized as a powerful force in creativity, perhaps because it has less of the mortar and glue of structural dilemmas. All writers turn to the damp ferment of the mind's dark spaces, hoping their work will draw out surprises, unfamiliar truths. Many writers say that they write poems to discover what is true, and record it in a new way. Any writing, really, is creative. A legal brief, for instance, shifts through facts, seeking places to open them into arguments. Research ushers lawyers through imaginative opportunities: they build solid cases by sifting through case books, warping their findings to the facts, and connecting them with the language of conviction or defense. In the end, perhaps lawyers too are surprised by their own interactions with a process of investigation.

* * *

When the girl sifts through the aisles and finds other items that remind her of her own, she has a clearer picture of her grandmother. The linens are hand-sewn, the silver sachet boxes wrapped in felt. Across the aisle, she sees an old photograph yellowing in a frame. Inside: a man seated at the head of a milk wagon, his horse looking askance, beyond the frame. The silver frame matches her grandmother's sachet box, her silver handled comb. For the girl, this marks an era, a time when linens were worn for weddings only, and milk was chilled in holes beneath the floorboards. Her grandmother, unmarried when she crossed the sea, must have come to the new country in anticipation of a wedding. The dress, pressed into the trunk, had been unworn. The girl thinks now of men in milk trucks, the flicks of mud against her grandmother's shoes as she stepped from the gangway. It was here that she searched for her new husband. Could he have come to her in the starched seams of a war uniform? The story unfolds, much like the dresses released from the box, battered now by the decay of relics, and bolstered by the girl's own visits to the warehouse.

* * *

Surprise is what Bachelard calls "novelty," the unpredictable alchemy of metaphors. By bringing two formerly unlike ideas, objects, or events together, the collision can create new and unexpected truths, an escape from cliché into some new insight. Bruner says that "all forms of effective surprise grow out of combinational activity, of placing things in new perspectives" (Knowing 20). Such "fruitful combinations" (20) instigate learning, and are the provocation in searching for new truths. Because writing rebels against fixity, as Bahktin noted, intent cannot remain cemented to the utterance (272-76). Intent and slippage, as a polarity, develops a creative tension which opens possibility. Language uncovers deeper intents looming in the subconscious, and thriving upon cultural cues, it shifts and exposes new insights. The resistance of language to the individual's utterances (293-4) may, at first, frustrate those in the midst of imaginative tasks; they want to say what they mean and having said it, they want it to stay put. Who can blame them? Writing, in our society, is often heralded as a direct transcription of thinking, as if we all, like Bartleby, are scriveners, taking down precisely what the mind dictates. But writing is less a dictation from the mind, and more a collage of ideas, moving and banging against each other, organized into a particular representation. Writing is more map than transcript; it renders complex terrain and pieces it into a whole. Some areas we, as readers, visit more than others as we scoot across the topography of the piece. In the process, the mind fumbles along, and the pen picks up scraps in its wake. Later, the mind and the writing tools make compromises; they negotiate deals with each other. Form evolves in the synaptic snaps of internal wrangles and external physical actions.

Teaching, too, is like this. No one expects her students to clearly recite all of the profundities of presented material; instead, teachers help students move around the mass of material, guiding them to their own revelations and complicated patterns of discovery. Along the way, good teachers, like good writers, are surprised by the originality and synthesis of thoughtful reflection and engagement. They are masters of compromise and negotiation. The encounters that foster absorption, as Rollo May suggests, sustain the interactions with the creative process itself. Pleasing surprises result from the integration of left and right brain activities, promoting discovery. The renowned author of Flow, an intellectual treatise on happiness, Csikszentmihalyi, also fosters absorption with tasks as the key to persistence, deep thinking and, ultimately, pleasure.

Discovery is also promoted by collaboration. To move inside an inquiry is an inclusive activity. One has to let others and "otherness" in. If language maps the terrain, then we must work on both the terrain and our mapping of it, so that in Freire's terms, we can make the words "true." Truth is better revealed by exposure to varying points of view and our own circuitry, exposed to the matters at hand. To create and to unearth the unpredicted truths means to investigate deeply while being as patient as a security guard. Though the alchemy of formerly disparate ideas, the creative process thrives. Bruner recommends setting up heuristic endeavors, aiming a compass toward productive combinations. In the end, we live within the maps of our making, in turn transforming our relation to the world into intimacy.

* * *

On a day when the weather cracks open and spring leaks into the streets, the girl walks to the warehouse. The chill in the air feels like warmth. Ahead, she sees the warehouse doors thrust wide, and a little flock of passersby clustering to the now-widened entrance. The outer walls seem to peel away as the girl draws near. Light intrudes, illuminating the aisles, catching the boxes and unassembled furniture. The girl pauses, scanning the rows, the items thrust anew into the light.

"Step aside, please," the guard says. "We need to get a truck in here."

"Are you selling anything?" asks a woman on the street.

"We're moving some of this stuff to a bigger place," the man says, waving to a truck, backing down the block.

"Will my things be going?" asks the girl.

"Most will," he says.

SPACE, STRUCTURE, STORAGE

Poetry is the art of seeing what isn't. It makes visible the spaces in which nothing existed, and it emerges to fill these caesuras of our lives, or to remind us that such silences exist. To create something from open space, a poet structures language, and in that matrix, she stores innuendo, metaphor, philosophy, history and narrative. In the end, a poem is as real as a warehouse. Readers, enter at first puzzled by the space; they look closely at the building's cues: how it was constructed, how it fits into the environs, and what it might hold. To read, after all, is to furnish and to store our belongings, to keep the experience as part of our inner lives. By holding poems—as well as stories—within us, we are weaving complex interior narratives filled with longing and learning. Writing stories, poems, and plays, and storing them on paper, rearranges and manipulates our fantasies; they assist their creators in making sense of the world around them.

Learning, in many instances, is about storage. In school, we plug our heads with verb conjugations, dates of wars, names of generals, the process of photosynthesis, and we expect our teachers to excavate, to make us ready, and to provide us with such fill. But real learning, as John Dewey and Ted Sizer tell us, is actually about connecting things, making ideas out of isolated facts, forming opinions and substantiating them, and building new frameworks for our beliefs and ideas to thrive. These are the elements we assemble inside the warehouse, that place that once did not exist at all.

It is memory-- personal, cultural and historical-- that constructs our ability to store knowledge and our uses of it. As Frances Yates points out in her seminal book The Art of Memory, memory is "the converting power, the bridge between the abstraction and the image" (96). This dialogue between symbol and idea initiates critical thinking, rather than simplistic notions of representation. To place a lens on this interaction between the abstraction and the image, drawing upon our own experiences and those of our culture, we have the power to build a structure and then use it for storage: a monument with the doors pulled wide and the entrance gaping, always open. Later, we wheel things in and out at will, and if needed, we remodel the building, sometimes changing its very structure, to accommodate our remembrances.

In these spaces where new visions can be structured, ideas beg forms. How will we formulate what we know? How will we outline our explanations? And, traveling outward: what forms do the culture's ideas come in? How have people built structures before? Like poets, open spaces beckon to us. Wallace Stevens, at the end of "The Snow Man," writes about this very recognition:

> For the listener, who listens in to snow
> And nothing himself, beholds
> Nothing that is not there and the nothing that is (9-10).

To educate, teachers must have faith in the "nothing that is not there," and most of all in "the nothing that is." Teachers offer possibilities and facilitate the construction of learning. They unroll blueprints and ask students to change them. They ask students to see spaces and to build and to store.

Writing poems and stories and reconstructing them orally are two forms of storage: paper storage and body storage. Both thrive on what James Moffett terms "inner speech," and what Frances Yates defines as the art of memory: "inner writing." What we keep inside our bodies, what we retain and what we feel as part of ourselves is crucial to human development and to anyone's ability to thrive in future emotional and intellectual arenas.

Body storage helps us act and to communicate immediately in "real time" through what Deborah Tannen terms "interpersonal involvement." She notes that literate strategies—a term she later refutes—impose "relatively less focus on interpersonal involvement" than oral discourses (124). Tannen assembles these oral strategies which include: "pacing, rate of speech, overlap and interruption, intonation, pitch, loudness, syntactic structures, topic, storytelling, humor and irony" (133). These are all vehicles for pulling what is stored out of ourselves, and possibly, influencing our listeners, helping them to remember the interaction, placing it into their own forms of body storage. These strategies facilitate the loading and unloading of images, as well as their assimilation into us. The magic of storytelling becomes an art where these techniques mingle in a new way, inspiring the magic of oral experience.

Paper storage, on the other hand, organizes our thoughts for more complex readings that do not exist in the present. These readings live outside of "real time." On paper, as writers and students, we create a different variation of storage, for a less personal, less immediate purpose. Since paper is a separate entity from the body, and vulnerable to a different set of environmental influences, literacy ushers in a whole realm of complexities, both as a process and as a fixed storage. The act of physically rendering a story or poem on the page is a different kind of making something out of words. As Moffett says, "Because inner speech is the matrix of spontaneous discourse that can be composed in any direction and that reflects any externalities, it allows us to integrate all discursive learning" (Center 80).

By retrieving inner speech, bringing it outward, and revising it for the page, we hone and explore what we have stored, creating then a new structure in a space that had not been filled before. Moffett calls writing a "revision of inner speech," and he claims that "nothing is so important to education as this circularity of inner and outer speech, mind and society" (Center 77, 95). To learn is to integrate, process and store. It is also to give away what we have stored. What we learn is self-replenishing, thriving on use.

Because fictional, poetic and real experiences merge in the hodgepodge of the mind, they all are the materials that structure value judgments. At times, one cannot separate a real life experience from a "read" experience. Freud credited imaginative activity with the power of lived activity, since both deeply influenced the psyche. James Britton claims that by taking on the role of the witness, one sees one's own past and future experiences along with those of others. Practicing this means one can also witness "events that have never happened and could never happen" (103). All of these experiences contribute meaningfully to our being.

Stories and poems are open structures, not airless bell jars, but storage mechanisms that hold possibility. They store literal imagery and the permeable abstractions of working those images; readers supply the bridge of memory; the alchemaic process grows, like "black flowers bloom(ing) in matter's darkness" (Bachelard 19). Fiction also creates what Sapir terms the "reduction of experience to familiar form" (339). Poems, in contrast, are essential utterances, webs of essence, while stories host situations adjacent to our own, realms where repression and desire can be unleashed, places where we might turn around and see new perspectives. Both poetry and fiction need the potency of lived experience to bloom; they allow us to incorporate particular fictional events into our own world views. Umberto Eco describes fiction as "the opportunity to employ limitlessly our facilities for perceiving the world and reconstructing the past," and we "train our ability to structure our past and present experience" (Eco 131).

Memory becomes an adhesive between living in the present and realigning the past; it is the bridge between image and abstraction that Yates so artfully describes. Sometimes the process of building the bridge suspends time: for the writer, a world of past and present can exist in one fiction or one poem which the reader re-activates in her own present, thus dissolving the bridge itself. James Britton writes:

> Events take place and are gone: it is the representation that lasts and accumulates and undergoes successive modification. It is from the representation we make that we gain a sense of a continuing existence in a world that has a past and a future, a world that remains in existence whether we are there to perceive it or not (18).

How much this implicates fiction and poetry! Writers create representations, perhaps inspired from actual events, and they create new spaces for understanding. "This is to work upon our representation of the particular experience and our world representation in order to incorporate one into the other more fully," as Britton states (19). Havelock narrows this idea by pointing to Piaget's model: "The mind's attention is continually bifocal; it preserves an identity, yet it makes room for a difference within this identity" (147). Our storage is constantly shifted, filtered and replenished with new materials, as are our readings of stories. In the end, both the internal paradigms of the mind have to accommodate and translate imagery into abstraction, and the external presentation, whether written or oral, must attend to structure as an expression of what is stored.

When we make things, we make symbols, iconic images. When an architect creates a building, she uses symbols in her materials and in her framework. The building itself becomes a symbol for shelter, a representation of what is held there. Suzanne Langer calls symbols "the typically human form of overt activity" (Philosophy; qtd. In Britton 21). When we act, or when we store information, we are structuring symbols. Symbols become the image end of the bridge to abstraction, as well as items to be stored within working structures. To make poems, read texts, build buildings, write letters, we are reliant upon representative devices. These symbols construct experience, and literature becomes, as Langer claims, "virtual experience" (Problems 29). And experience itself is a construct; it too fills spaces. When someone dies or when a book is burned, the space diminishes. It disintegrates. We use memory to protect the ruins. In oral cultures, where history is not recorded on paper, people protect the constructed spaces with tales, music and dance-- to both hold things in place and to allow them to metamorphosize. In literacy cultures, pages emerge as a vehicle to keep the memory of the lost alive.

Writing poems and stories constructs what isn't. It is also constructing what is. Like Stevens' speaker who sees in the snow both emptiness and possibility, we are all searching for ways to leave marks on our world, and to let the world leave marks on us. Learning by creating unites these two: in filling spaces, building structures and nurturing storage.

USING PROVERBS:

Proverbs are a natural bridge between paper storage and body storage. While tucked in the body, proverbs retain deliberate syntactic frames, useful in both speech and writing. As culturally-embedded metaphors, such aphorisms store distillations of folk wisdom. In many cultures, people draw upon proverbs to identify and deconstruct complex situations. Because of their simplicity and brevity, in both structure and abstracted lesson, they are "adopted as elementary lessons of culturally valued behavior" (Moreno and DiVesta 179-80). Proverbs are also useful to students, not only to identify and to recommend appropriate behavior, but to use as a method of inquiry because they "summarize prior experience, contribute to our expectations, and allow prediction of outcomes in novel problem-solving situations" (180). This, for students, is a gateway to critical thinking. " A person who can invoke a proverb in a given situation, therefore, is not dealing with an unknown," say Goodwin and Wenzel (142). Students can use proverbs by relying on the cultural and personal storage they provide, and by mounting new proverbs in old frameworks. In this way, learners can confront "novel problem-solving situations" and make predictions. This method, as a mechanism for learning, puts language in action, in form, and therefore in contexts to confront and disassemble enigmatic scenarios.

As frameworks, proverb structures are predictable and classifiable. They are also communal, relying upon interaction, and quite often, they can even be more powerful than the poet's storehouse of images. Proverbs resonate in everyday speech, and the listener pauses to assimilate the proverb and reapply it to the situation at hand. Proverbs can inspire the poet, urging her to build new truths from them. Such adages, shared socially, rely on fixed, identifiable syntactic constructs. Some formulas identified by paremiologist Alan Dundes are:

- "Better _______ than ______"

- "A ______ is a ______"
- "______ never ______"
- "______ or ______"
- "'______' said the ______ as (s)he ______" (46)

"From the structural point of view," write Holden and Warshaw, "a proverb is really an equality expression. Graphically, it can be portrayed as an equality expression between two statements, one literal, one abstract. The abstract one must be constructed" (63). In simpler terms, a proverb is a metaphor. Listeners have to build the abstract ideal from the concrete, and apply it to a larger context that is both specific and abstract: "All proverbs are potentially propositions which compare and/or contrast" (Dundes 54). By having the model to compare one unknown with a known, a student can come to a greater truth about both the known and the unknown. Making metaphors is not easy; having a generative proverb frame makes the process easier.

When given more detailed analysis, proverbs also display more complicated lodgings: "The basic architectural structure is composed of four statements or propositions and this is the basis for calling it quadripartite...four is a pervasive and stable deep-structure, what Levi-Strauss called a model" (Perry 31). The syntactic structures also display logical connections, illuminating the connections between the four propositions. In the process that Goodwin and Wenzel outline, the roles of proverbs reach from specific patterning into resonance; they "1) reflect an implicit typology of patterns of reasoning or argument, 2) illustrate and comment upon legitimate patterns of inference, and 3) caution against general and specific fallacies" (157). The logic of proverbs hangs on their framing, their structures. Even when they resound with truth, they are inferring accuracy with the establishment of patterns, cues we easily, but mysteriously, recognize in speech.

Even in such logical frames, proverbs rely heavily on poetic devices. Like poems, they distill experience. Ruth Finnegan states that "Proverbs are a rich source of imagery and succinct expression on which elaborate forms can draw" (11). These elaborations take on elements that transcend exposition, becoming poetic. Finnegan recognizes the element of imaginative writing in proverbs: "...in addition to terseness and relative fixity, most sayings classed as proverbs are also marked by some kind of poetic quality in style or sense..." (14). This intersection of the poetic and the structural open gateways to critical and imaginative thinking, demanding applications to particular situations while also universalizing them.

When students adopt these poetic devices, which Frank D'Angelo outlines as "alliteration", "rhyme", "metaphor and simile", "repetition", "ellipsis", "parallelism", "antithesis" and "puns", they can learn more about the strategies themselves, while, at the same time, embarking on the process of using proverbs as generative frames (366). Here, the toolbox spills open, creating many uses, not the least of which is to "offer a general set of rational strategies for deliberating about life's problems" (Goodwin and Wenzel 158). In using proverbs, one gives an anchor to an enigma. Something vague and puzzling is grounded within the application of a proverb. Since a proverb can "disambiguate complex situations and events," by their nature, such aphorisms must be open-ended to allow the injection of intuition, opinion and projection (Lieber 101). Of course, the proverb alone serves to make sense of particular situations; the structure can be fixed while its implications and uses burst into open spaces. The structure frames the reading at the same time it imposes freedom upon it.

Once used as "proof in formal arguments, and as a means of learning to paraphrase," proverbs have been utilized by students for centuries (D'Angelo 367). Young scholars in the Renaissance filled their commonplace books with adages. Other than the Psalms, no rhetorical structure has so infused speech across cultures, and for such an extended period of time. Even when isolated from whole contexts, proverbs ask their listeners and readers to draw inferences and develop abstract reasoning: the same skills demanded of a good reader, writer and storyteller. Proverbs provide opportunities for students to look closely at the functioning of grammatical structures, individual words, and literary devices (most notably metaphor).

Quotes, statements of wisdom, proverbs-- they all entice us. Proverbs can inspire adolescent thinkers who have reached the Piagetian stage of formal operational thinking, who are developmentally ready to grasp abstract meaning. (Research of Piaget, Holden, Richardson and Church suggests that students younger than eleven or twelve generally do not grasp proverbs.) Adolescents are, according to Piaget, "the individuals who submit themselves to possibility," and this new stage of awakening opens the door to a complex storage facility in the mind. Because it feels motivating to find wisdom and apply it, one can also marvel at inventing it, filling spaces with new structural frameworks.

A proverb can open the gates to something not understood. But for a proverb "to endure, it must also be useful. It must have some strategic value in coping with some relatively common human problem or situation" (Goodwin and Wenzel 142). Parents invoke proverbs as they grapple with raising their children; business people use proverbs to understand complex dealings with markets. Yet proverbs are a departure from regular speech. Psycholinguists have long tried to ascertain how we orally tag these differences. Something shifts in a speaker's utterance when a proverb is delivered; something tilts in the listener. In oral cultures, these proverbial shifts lace speech. In poetic writing one can sense the notion of the essence, of stylized language that transcends particularity. Roland Barthes claims that "popular proverbs forsee more than they assert, they remain the speech of a humanity which is making itself, not one which is" (154). With this power to forecast comes the resonance of poetry; when one predicts, one conjures up imagery, the building blocks of imagined space. Prophesy, certainly, is an act of imagination. Proverbs are one leap into metaphor, into the foretelling of a world still evolving.

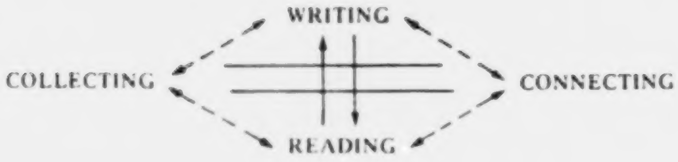
In many ways, proverbs pose oppositions that are "not resolved" (Dundes 60). A proverb points to a situation, identifies its complexity, but does not demand direct action. Proverbs ruminate. They allow students to pass into larger, operative theaters, where the puzzles of science, math, history, art, architecture and literature reside. What they store: folk wisdom, one's identity with particular cultural heritages, aphoristic structures and methods to apply them, all the while begging the contexts.

Walter Ong, linguist and cultural theorist, claims that proverbs are forms of "social apprenticeship" in some cultures (9). They provide the impetus for storytelling, but they also serve as mnemonic devices. Ong claims that "serious thought is intertwined with memory systems," (34) and Havelock takes it one step further by claiming that "mnemonic needs determine syntax" (87-96; 131-2; 294-6). To invert the equation here, students may turn to formulas in order to memorize material, as well as to generate new meaning. Ong believes "formulas help implement rhythmic discourse and also act as mnemonic aids in their own right..." (35). It is easier to remember lists, principles, and ideas when one has structural frameworks, or warehouses, in which to put them. Even such a distillation can create the impetus to move from entropy into a creative process. Proverbs, along with the poetic tools they utilize, give one solution to exercising memory as a trolling net. Alliteration, antithesis, assonance, epithets all serve as forms, inside or outside proverbs. Such exterior patterns help internalize information and philosophy.

In the conceptual framework of Space, Structure, Storage curriculum that follows, proverbs are generated not as morals, but as invented truths. They are practice hooks that direct us into these cultural storehouses. "By citing a proverb...a speaker makes his hearer aware of or convinces him of (his/her) common group membership or cultural heritage..." (Lieber 146). By looking at proverbs from other cultures, one can learn more about his or her own. They provide both access and identification, a means to explore the world. Miraculously, it seems all cultures use some variation of proverbs, a wealth of information stored in such humble huts. As segues, proverbs are passports.

A CURRICULAR MODEL

To connect these notions of space, structure and storage with proverbs as generative frames, the following model places this process into a curriculum. Divided into seven parts, each part is designed for one to two hours of meeting time. The whole curriculum works as a mini-course or part of a larger high school or liberal arts course. Like Donald Murray's paradigm of the writing process, this model attempts to both instigate and organize chaos. Murray's diagram looks like this:



(23)

The space, structure, storage curriculum, as a process, is a constructivist and dialogic exploration. As "the writer welcomes unexpected relationships between pieces of information never before heard in the writer's head," as Murray describes, she explores material outside her own storage mechanisms (20). Unlike insular theories of the writing process as a self-centered activity, this new model breaks outward, knocking out the side wall in the "collecting" side of the equation.

Proverbs generate reactions, opinions and inferences about the outside world, about material that is puzzling. This is where inquiry begins. Like the curricula of The Coalition of Essential Schools, this curriculum is triggered by an essential question, a pivot from which the class activities spin, throwing open the doors of students' warehouses. The model is structured so that a variety of subject areas could plant themes into this "triggering town" (as poet Richard Hugo would call it). The over-arching theme of Space, Storage and Structure could be replaced or re-modeled to suit the needs of the exploration. In its structuring, this process of curriculum design emphasizes the necessity of a thoughtful open process with enough framing to sustain inquiry, without stifling it. (This design is, however, flexible and broad enough to house a range of inquiries.)

Since poems and stories are begun here, along with some rudimentary memorization analysis, both oral and literate traditions are called upon. These methods are transportable across disciplines, focusing on the role of memory, or building knowledge into oneself through the workings of image and abstractions. In many ways, no matter what the course, one's work is always about Space, Structure and Storage.

The Coalition for Essential Schools and the work by Brooks and Brooks (The Constructivist Teacher) greatly influenced this paradigm, centering on an essential question. Since learning is a process of exploration rather than the load-and-fill strategies of content-driven classrooms, the model should be considered as a circular one, one which can be repeated many times through the course of a sustained dialogue, or extended so that it rotates in a single sweep throughout a term long class. Ultimately, a scientist, mathematician, historian, painter, dramatist, writer and critic should feel comfortable operating in this "space." The structure is as flexible as it is fixed: a form of impermanent architecture.

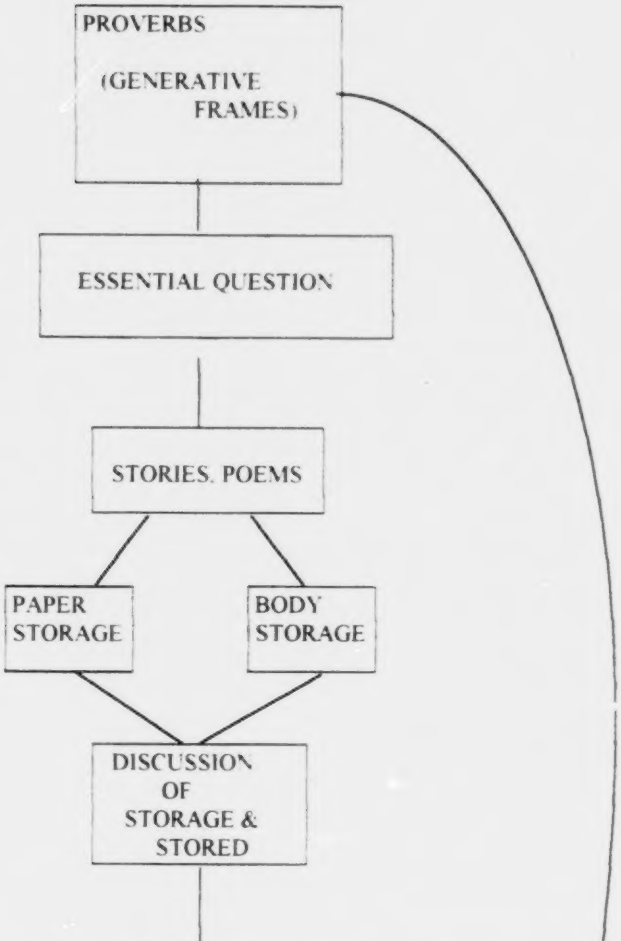
THE ESSENTIAL QUESTION

The triggering subject in the following curriculum design is *Architecture: some elementary principles*. In many ways, this essential question was inspired by The Art of Memory in which Frances Yates connects memory, as a deeply human function, to architecture: "Very singular is the art of this invisible art of memory. It reflects ancient architecture but in an unclassical spirit, concentrating its choice on irregular places and avoiding symmetrical orders. It is full of human imagery of a very personal kind..." (16). Using this focus, the exploration takes students (high school, undergraduate or adults) into history, classical studies, drawing and design, and literature.

THE MODEL:

A flat, two-dimensional model follows. It should be thought of as a rotating mobius strip, constantly moving and twisting to make connections. In the first interaction, proverbs are analyzed, supplemented with material which describes their structures and their cultural universality. These discoveries are connected to the essential question, the subject matter at hand, to generate written material about specific observations and processes inherent in the topic. From these applications of proverbs to discipline-specific material, the class moves to creating stories and poems, while letting the proverbs and the new material inspire them. These stories and poems are presented both in writing and orally. Pedagogically, this exercise hopes to assist students in articulating their ideas without paper, drawing on the skills of the storyteller, as well as to enhance their writing skills on paper. "Body storage" becomes the assimilation of memory and living in the present, and "paper storage" of adhering images to paper, and not allowing them to draw on animated assistance from their creators. This distinction should open windows to learning, to meta-reflections upon each students strategies for assimilating material. At this point in the creative process, students can accommodate revision of the initial stories and poems with new discoveries of the initial material. Refining the essential question becomes the penultimate activity, one which plays to the specific needs of each student's search for themes and pivots in the subject. At the end, the group reviews the role of the proverbs in the learning experience. This juncture provides the opportunity for the research to spin back to its origins, and allow more response

Following the model is the meeting-by-meeting breakdown of the curriculum.


PROVERBS
(GENERATIVE FRAMES)
ESSENTIAL QUESTION
STORIES, POEMS
PAPER STORAGE
BODY STORAGE
DISCUSSION OF STORAGE & STORED
REVISION OF STORAGE & STORED
REFINE ESSENTIAL QUESTION
ROLE OF PROVERBS
CREATE CONNECTIVE WEBS

PART 1:

Activity and Location: Discussion in the classroom.

Materials: slide projector, slides and reading material.

1. Look at James Tate's poem "No Spitting Up." (Appendix A.)
   Discuss first line as a generative frame.

2. What is a proverb? Make lists of ones we know. Review cultural ones.
- How are proverbs a means of storage? (Appendix A.)
- What models do they follow?

3. Using these, we make our own proverbs in response to three slides which represent different genres, eras. (For example: pre- Gothic cathedral, 19th century theater, Le Corbusier house.) (Appendix B.)

4. Discuss four principles any architect has to consider:
- Use, functionality, aesthetics and content.
- Apply these to the proverbs and to what they reveal about the buildings.

Assignment for Part 2: Read "Some Uses of Proverbs" by Frank J. D'Angelo, Proverb list from other cultures and Chapter One of Experiencing Architecture. (Appendix C.)

Analysis:

The goal of this day's work is to recognize and analyze what a proverb is, collect some we know, and apply them as generative frames: recording opinions, intuitions and impressions of three styles of buildings. Tate's poem (a prose poem, really) uses a proverb frame to create a new, comic wisdom in his poem "No Spitting Up." The poem fills space with its stocky, sturdy structure. It resembles an elevator, lifting us from the frame, into a new and complex world. This exercise draws upon what we have stored in our bodies (proverbs along with untethered ideas), and asks the class to revise and utilize these things from our memories to discover new concepts about architecture. Essentially, the exercise uses intuitive ideas to generate discussion and inquiry into architecture.

PART 2:

Activity and Location: Travel to site of empty lot, space where a building once stood. (If a site visit is not possible, photographs of a lot with surrounding environs will do.)

Materials: tape recorders, journals, pens.

1. In groups of three, make up three proverbs about the space, and three about the building that you would build there.

- Use D'Angelo's categories.
- Keep in mind the architectural and proverbial principles you learned about in your reading.

2. Each person must write down the six proverbs and the corresponding categories to which they apply.

2. Then, in these same groups of three, take turns tape recording your impressions as you walk the perimeter of the site.

- Approximate measurements using strides.
- Look at the context of the site. What is around it? What would be useful here?
- What might an imaginary building be like, taking into account, use, functionality, aesthetics and content? Who would use the building?
- Start to make an oral story, or tale about the scene and building. This may be inspired by the proverb. Use your tape recorder to take notes and your journals to draw impressions, ideas you can't hold on tape.

Assignment for Part 3: Write your own version of the story you began together. Include at least one of your proverbs and several of the impressions of the space you explored.

Analysis:

By taking this journey out of the classroom, students are literally moving through space. Then, they arrive at a building that isn't. Using the "nothing that is not there," they create impressions of the space, as an architect would, constructing the beginnings of a hypothetical building by relying on proverb, making the "nothing that is." The groups will generate more ideas by working together, and by recording their impressions, as an oral historian would, on tape. They are learning to collect material. The reading, on architecture and proverbs, enhances the students' abilities to generate ideas and to locate ready frameworks for them.

PART 3:

Activity and Location: Discussion in the classroom; large and small groups working together.

Materials: tape recorders with previous day's tapes.

1. Read Frances Yates selection together. (Appendix D.)
- Discuss the concept of buildings as storage facilities for memory.
- Use specific buildings from the stories as examples.

2. In the same groups of three, listen to tapes, taking notes.
- What did you learn about space and context?

3. Share your stories, noting similarities. In your journal, make a list of these similarities.
- Do you have similar characters or situations?
- What are the characteristics of the building?
- What does the story remind you of?

4. Plant memory loci within your fictional building.

Assignment for Part 4: Revise your story to be delivered orally. Use memory loci in your building. Be prepared to tell the story in class. It must be at least three minutes long. Read "Demolition" by Mark Doty. (Appendix E.)

Analysis:

When the students handed in their tapes at the previous meeting, they surrendered a form of stored memory. To create the stories, they rely on original proverbs and whatever they could recall at the site, filling the rest in with imaginative inventions. They literally walked around the space and imagined a building there. According to Frances Yates, the ancient system of memory outlined in the Ad Herennium is "the main source, and indeed the only complete source for the classical art of memory both in the Greek and Latin world" (6). Written in approximately 82 B.C., hundreds of years before the invention of moveable type, this system demanded that the student of mnemonics imagine a building. This building, furnished with imagined details, becomes the container for the speech, story or list that the imaginer needs to recall later. By placing cues from the target discourse on to loci within the structure, the memorizer tours the building. When the information needs to be called forth in the future, she returns to the loci where the earlier ideas were planted. By "walking" through the building again, the original material is recalled. This is a useful connection to the physical act the students performed during the last meeting when they walked around the fictional building.

The discussion can, and should, sprawl into regions of memorization and physical space, and how we structure internal space. Some worthwhile questions: Did the space give cues to your imagined building? How will you remember them?

In the second part of the meeting, students listen to their tapes and create new versions of their stories (revision), from the ones they've written. Together, they work to plant memory devices into their stories so that they can be re-told orally.

PART 4:

Location and Activity: Discussion in the classroom. The room should be set up like a theater in the round.

1. Performance of oral tales.
- Watch body language, and try to feel the structure of each story.

2. Discuss what the stories have in common in terms of imagery.
- Make some assumptions about what the stories and proverbs tell you about the space, structure and storage of the hypothetical building and empty lot.

3. Write these impressions down.

Assignment for Part 5: Draw the building which you would put in the empty lot. You may include floor plans, sketches of different angles, but emphasize the shape of the building. This might be done on the computer, especially with a program like VISIO. Read 3/14, 3/15, 3/16 in Architecture is Elementary. (Appendix E.)

Analysis:

The oral presentation of stories reveal strategies of memorization, along with the difficulties and successful techniques of sustaining a story in front of a group. The underlying grammar of the imagery, as Bettelheim claims, will reveal a lot about the speaker and/or narrator of the story. Students should be prepared to watch the stories, noting points where the delivery especially imitates content. These stories offer devices to assist body storage, and inspire an ongoing exploration of architecture. Because students are keeping records of elements of space, structure and storage, the tools for learning a range of information and ideas, and reformulating them, become more developed. "Demolition", the poem by Mark Doty, describes the demise of a building. It creates a structure that details the vulnerability of another structure, an idea that grows more useful over the next meetings. Since poetic devices are also strategies for housing memory, the students may be inclined to draw upon these as they construct their own images and plant them in the stories.

PART 5:

Location and activity: Discussion in the classroom, individual and small groups.

1. Tour the room, and look at the drawings.
- Compare buildings.

2. Look at the proverb structures proposed in the handout. Which one would you apply to your building? Why?

2. Create new proverbs which apply to your building.

3. Write journal responses.
- How does your building structure space?
- How is it a reservoir for storage?

4. Draw memory loci into your building. Make a key.

Assignment: Write a poem in the shape of your building. Use your proverbs to help you. Read Chapter 2 in Experiencing Architecture and selections from Housekeeping. (Appendix F.)

Analysis:

Paper storage can include visual representations outside of language. In the assignment, students generate drawings of a building to fit in the space they visited. The goal here is to imagine visual space, and to apply some basic architectural principles to their designs. In class, they turn—once again—to proverbs: first, by choosing some structures from D'Angelo's categories, and second, by creating new proverbs in those frameworks. Abstract reasoning is escalated here: choosing the proverb framework is inspired by the building itself. Two structures, two storage facilities, overlap in the mind. The class returns to storage, placing memory loci in their buildings and writing journal reflections on these. This day's work makes storage both literal and abstract, bridging what Yates calls the abstraction and the image, with memory.

PART 6:

Activity and Location: Discussion in the classroom, individual writing activities.

1. Share the poems and discuss what issues the poems raise.

2. Make a compare/contrast list about your building and your poem.
- Use this list to instigate generalizations about how buildings and poems are alike.

2. Use the poem to inspire a short essay about architecture.
- Imagine what is outside the borders of the poem.
- What does your poem store?

Assignment: Journal entry reflecting upon how you have structured space, and stored your responses over the last meetings. Write at least three assumptions: one about memory, one about architecture and one about literature, each on a separate sheet of paper. (Be very specific. Cite an example on each sheet, to support your assumption.) Write at least three memorable quotes from your reading, each on a separate sheet of paper.

Analysis:

Suzanne Langer, philosopher of aesthetics, says that a poem, as a "composed apparition has as definite a structure as a musical composition, a piece of sculpture, an architectural work or a painting" (Problems 148). Students here are embarking on artlike research that immerses them in a creative process. In this way, the results differ from research papers. The poem "is not," Langer goes on to say, "a report or a comment but a constructed form... in the same way that a work of plastic art is an expressive form—by virtue of the tensions and resolutions, balances and asymmetries among its own elements, which beget the illusions of organic nature that artists call 'living form'" (148-9). The poem is, in other words, an object. The point of this day's work is to treat the poem as an object that can inspire a more discursive dialogue.

PART 7:

Location and Activity: Interactive group work and large group discussion.

Materials: tape and multi-colored yarn.

1. Assemble the observations. Read them aloud.

2. With tape, the students should affix each assumption and quote to separate physical loci within the room.

3. Divide the students into teams, each designated by a particular color of a ball of yarn. The teams represent: 1) Buildings 2) Memory and 3) Literature

4. The students, in teams, circulate through the room. The goal is to make connections between the quotes and assumptions that have been taped throughout the room. Using the string, they connect the physical quotes and/or assumptions, two at a time. For each connection, they must write an intellectual connection between the two loci, and hang it from the string connecting the points.

5. After a set period of time, when the students are sufficiently tangled in the web of yarn, they should stop. The teacher will point out the connections, and then the students will read the connections and vote on each one's legitimacy as an intellectually sturdy idea.

6. At the end of the meeting, students choose connections to take home, and paste in their commonplace books, to inspire papers beyond the realm of this particular curriculum.

Last Assignment:. Reflect upon oral vs. paper storage of ideas. Which is useful to which situations? Present, orally, your ideas from the past six days of study. Make lists of what you want to know more about, in architecture, urban planning, the development of memory and in stories and poems.

Analysis:

This exercise seems complicated, but it is actually just a physical rendering of what students already do when they write. By making connections, writing them down, and following them in the topography of a classroom, they are constructing a physical architecture, a web that might represent history, thinking, or structures for storage. This culminates the ideas generated over the last six meetings, and inspires more specific explorations in architecture, literature and classics.

ASSESSMENT:

Assessment tools for the curriculum are based on two principles:

- Transportability:

1. Can the model be used for inquiries in a variety of disciplines?
2. Does the exploration contribute to addressing meaningfully the essential question?

- Connections:

1. Are the methods clear and understandable?
2. Does the reading promote a connection between abstraction and image, between interior and exterior forms of learning?
3. Does the conceptual framework of space, structure and storage hold up through the activities of the curriculum?

To assess the work of individual students, the following criteria might be considered.[*]

Each student should:

1) record material in a commonplace book or journal
    Assessed on:
    --depth of inquiry, including range of resources
    --risk-taking
    --accuracy and thoroughness of records
    --mapping the sources of intuitive decisions

2) ask questions that promote searching

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[*] This model is based on work with Klingenstein Fellows Bill McGuire and Eric Temple.

Assessed on:
--asking questions of other groups
--asking contextual questions
--asking questions that promote further inquiry
--asking questions that reflect upon data of one's work and work of others

3) use reflective analogies to draw relevance
Assessed through log book, nightly assignments and group discussions

4) give attention to research detail
Assessed through log book, nightly assignments and group discussions

5) contribute to general research
Assessed through group work, drafts and final versions of written materials

Frances McCue 68

THE GLASS PASSAGE

In Nature's shifting glimmer-glass
Stars are nets, we their haul,
Gods are shadows on a wall.

Velimir Khlebnikov

1. *The Anteroom*

These words are glass
spun airless from sand
like an utterance, half tongued,
caught behind our eyes, the gaze
into spaces dissolving
a place locked by omission:
materials, here, turn over
of glass partly transparent

Hang your coats.

glass unglued a language
sanded into fire, melting
tongues leave speech
gazing back through simulacra
solving the way, the passage:
mission in frames where
lovers in the mind, shards
apparent, still. There is a wall.

We'll begin here.

2. The Corridor

Think of steps, traveling   neither up, nor down,
your boots slapping marble   perhaps, or wood.
The room, here, folded in   like speech collapsing—
our choices narrow.   You must squeeze through.
Lonely as you are   you hurry, as most do
through hallways. Arches   want you to float.
Neither wall can mirror   the other, as it did
behind us, in the anteroom.   Your belongings shuffled—
coats snapped to racks,   hats tucked, the place
begins like a museum.   No wallets here.
Take only what you   might need graveside.
Let the words pull tight,   slipping you into a gaze
stilled mid-glance, for   focus saves nothing.
Symmetry is a conceit.   Look closely and it will
delay, retreat. Let's say   this corridor is time's
stark continuum, *zaum*   the language most adored.
Pull the pavement overhead.   Tinker with the underbelly,
the plumbing of our streets.   Most of those who pass
underneath, never to cross   centuries, hugging the last,
beg for segue. The way   through sets the straddle
where millennia adjacent   are pulled wider apart.
This bridge, all glass—   some lead—lifts and sinks.
Landed now, the route   charts a glass-wrapped
tour at twenty centuries'   end. Follow the maze
from hell to heaven   overlapped in purgatorio.
A gaze, alas, will keep   the thing aligned, across
dear Charon's wake.   Do not look back.

3. *The Palace*

Within the harmonium
time sends to us,
sealing our centuries,

glass slides the material
ahead, in panes-- glorious
engineering frames.

From the crystal palace,
we learned to build,
to layer, to tear away:

modules. No greenhouse
could imitate plants
like this one: huge poppies

spinning through transepts,
the apple's core, unblighted
in the bracing links, a leaf

spread across the roof,
view through a forest's
slivers. Passage as palace

or warehouse, conceits
the architect could not
imagine, her prisms

overturned. Luster transforms
repeating frames to
ornament, panels replicated

for acres. And the artifacts
collected there! Looms spun
mid-weave, the fabric's hands

spill beneath the glass; baskets,
nets, frames, artless machines
held under glass. Such wares

doomed to excess: the palace

dissolves into vision.
From outside, it melts to air,
nothing solid. Something

buzzed under the roof,
like a fly under a donut dome,
in this hothouse. At first,

it was psychological,
a monumental opening,
interior without boundaries.

The palace burns, glass
restored to fire. Ruskin's words
caught flame, dissembled

the greenhouse frame.
As warehouse, cathedral
or station, the palace could never

sustain a railway's steam,
or live up to its relics.
By now, the glass turns maze.

What we long for:
a veil to reveal
and disguise our gaze.

4. *The Arcade*

Could such a thing be so garish?
A dirty sky's our light into pass-

ages of history and novelty.
Baroque leftovers pull

motes to iron strands, all rust
and soot. Boots smudge the routes,

from shop to hall-- each way dead
ends into glass and doorways.

Greenish in their sludge, lamps
long dimmed, bulbs, filaments

tinged, find nostalgia for the gaz.
Such lighting slows our march,

steps, aloof, pulled through the market.
In the tangle of fauna, shadow--

the door peels ajar. Above rails
of balconies and gates, iron-wrought—

our tensions. In the jamb, sight
folds slim, veiling the clock mid-

chime, the hem of a cloak.
A decanter stands—we catch the prism,

a crystal edge where light splinters,
bounces into gaze. Wait! These shops

are closed. The arcade, now seals
its relics. Shopkeepers, long dead,

display their wares, propped
behind the glass. The dress-

maker's dummies, press the panes,
in gingham, fur collars, and shoes

with buttons looped through
while the cobbler's trophies--

soles half sewn-- tip to the window,
dragging some bootless world aloft.

Pressure sealed, the items cannot
reach behind the wall. Corridors

lean from the center, spokes aligned
from the walkways' hub. Views through

glass seal a verdict. Draperies mock
the gaze, trimming the view back to

ourselves. There! A chance
to razor-cut the city, turn lamp-

light into glare, and shears our watching,
these commodities, ossified, lost

Muse, so subterranean, so filled
by an aquarium, you turn

a thermometer-- mercury
sliding down our aisle. Then:

feet-clamped upon the street.

a century ago, frozen in glass
like the baker's cake, unretrieved.

the city into steam, hothouse
filter of our woes. The ceiling's

it opens at the mercurial pitch,
leaving us, hot and shivering,

5. *The Fissure*

From the arcade's narrow gape, the street.
Leaps of faith tumble us skyward. Grates   steam.
wispy beneath. Through the passage,   a city's bubble
leaking, we travel up. No architecture   protects us,
only sleep. In dream or aeroplane, we   alight into
a cloud-bound route. Our city illuminates   the waterways—
spines, double-backed, connected   in strings: bridges
all light and glass. Downwind, land   scape tilts,
spins us into vision. The roofs are   pavement-tarred:
soot-grout fills the rims. Lids within   lids, the city
stacks its margins: roadways widening   in rings, wrapped
around and over, like water guided   through its banks.
Darkness softens our air. Up here,   leaning to stars
and land, the heart lilts, caught   in the heavens.
Glass holds us, fixed in our little   ship, porthole-clips
through space. Then, the pavement   lifts from earth,
pulled to us by gaze. The passage   narrows—then, open
air. Buoyed by illusion, a glass   chain linked by fissure,
the passage adheres to all rooftop,   all sky.

6. *The skyscraper*

Both illusion:
language can
wrap a bulb,
but never
save a filament
from wind.
Shielding
the bulb,
a glass tube
may leave
us speechless
in the end.
What is one
to do, but
merge the two?
Up-ended,
our passage
in crystal,
aligns our
moves
from centre
to transept.
The gaze:
a reflective net.
Should it
float, and spin us
overhead,
what will become
of our earthbound
lives, the hells
we build
in spheres?
They'll cut
corners.
Take the elevator
to a divided
view.
In the pause
from palace to
office,
blueprints
are outlined
upon the glass:
our skin.

7. *The Glass House*

Antidote to corridors dark and thunder-struck,
the houses of our childhoods come back to us.
No dwelling survived without the relic: window
glass long-dimmed from use. Our memories
merge into clear, glass frames: pure nostalgia.

Once I lived in a windowless room.
How I envied the walls! The voices I could hear
just beyond the plaster, never appeared.
But the wall faced me, and tucked into corners,
I caught my hush and pressed myself upon the plane.

Later, the room slid wide. (I moved.)
So swept and modern, and the view!
I was lonely without my walls. But looking out:
glass cleared a passage. It opened the sky into
our alley, into my room. I couldn't see it then.

People who live in glass houses
should watch their words.
Children grow transparent
with the outside looking in.
Here, a child utters glass.

She speaks and shards fall from her teeth.
What will be her fate? Or the glass
when it looks transparent but is not--
just a pile at her feet?
Some words are cinderblock,

think of that. When the child sees
a mirror, she can't speak.
The glass, uncracked, glances
back. And though it bifurcates her view,
the child can see through and know

that glass has made her into two.
Shards, fates, the glass accumulates.
It looks transparent but is not
like words one cannot look through.
Glass can warp a glance,
distort the face: language too.

To live in glass is to hold a watch.

8. *From form to material*

TIME

glass:	passage:
transparent	connection
fluid	hinge
view	enclosure
material	structure

FORM

veil	way through
skin	chute
enclosure	liberation
voyeurism	surveillance

MATERIAL

9. *Paradiso*

"How pleasant it is to smash things!"*
In paradise, we crash through glass
to make more space. We've shattered
our past, and crave shards.

Our streets roll with gravel, all glass.

Ornaments hide our defects; gaze is a net.
The passages slides away, as words
spin tainted by their lodgings, lifting the poem,
hermetic, from the frame.

Buildings in the mind, warehouses for our past,
ask *what memories adhere to glass?*
Fingerprints, once ephemeral,
stay forever in the pane.

Marks of the hand obscure our view—
such veils transform a wall to skin and husk.
Reach toward light, and find
your wrist dipped in water.

Paradiso: To become the wrinkle, the
fold through time and warp,
where gods are pinned upon the walls,
kept from us by glass. Leave traces:

the knob within the hand, the seat within the chair.
When glass cracks, the snowfall rests.
When glass shatters, the vision grows.
Our passage ends. Ahead of us:

The years to cross in splinters.
How unexpected is heaven's novelty?
Is a word a mirror, or the mirror a wadeless sea
where words must drown?

---

* Dostoyevsky, Notes from the Underground

COMMENTARY ON THE GLASS PASSAGE

Of all architectural materials, glass has the most in common with words. Both language and glass, as materials, can be sturdy as well as fragile. Glass makes walls; words hold up governments. They are vulnerable too: paper is flimsy and windows can be broken with errant baseballs. Glass and language carry deceptions as well; they seem transparent, but can store strange innuendoes and refractions. We see ourselves in words and in the looking glass, but we cannot completely trust either vision. In contemporary literature, as in architecture, the reader is implicated in the structure, in materiality. Like glass, words can gesture to the viewer, refracting back some distortion of herself. Both words and glass allow the audience to read the material and to be read by it. In the poem, I wanted to play with some of these revelations and deceptions, and use both material and form to illuminate them.

In the past, glass has been subservient to form. Panes filled in the walls of Paxton's Crystal Palace; they lined the roof of arcades in the last century. Recently the attention has turned to the materiality of glass. In literature too, the language poets and self-reflexive narrators have isolated words as a medium. I wanted to imitate that shift in the poem. It, too, travels from the highly structured to a dissolution, or shattering, of the form.

In "The Anteroom," a lobby space is created, a place to "hang your coats." The piece is actually one stanza split down the middle to create an opening. The endwords on one side are repeated (sometimes in different variations) in the first words on the other side of the line.

Imitating the reflectivity of glass, the "walls" meet as if a transparent sheet were inserted. The two sides reflect each other, yet their sameness is a foreground for different backgrounds, much in the way that one wall can separate two rooms.

The wrangle here was to create a stanza that could be read across, and as two separate stanzas, reading down. I had to balance them, rhythmically and visually. In many ways, the left side of the poem, read on its own, creates the passage as an issue of empty space, "a place locked by omission." The right side claims that the passage, much like an echo chamber, is a place seeking an original, "gazing backward through simulacra/solving the way . . ." As a whole, I hope that the stanza represents the dichotomy of the passage as a place constructed out of a need to speak or build, to fill a space that has been empty, and the need to sort through the repetitive "shards" that claim no original.

"The Corridor" removes the reflecting wall, and inserts glass as pure transparency. It demands to be read across the gap. As a mimetic device, I want this form to parallel the constrained feeling of going into a confined space. I don't want the reader to be able to turn back, or make choices with the form. The symmetry should be confining, the caesura relieving. Here too, rhythm was important for balance and to thrust one forward. The adjacent rhymes and nearby slant rhymes further narrow the aisle through which the tourist of the passage ventures.

By adhering to tercets, "The Palace" relies on modularity. It is "Passage as palace/ or warehouse." The orderly display holds some unusual artifacts, and the comparisons to the

Crystal Palace are rampant. Like the palace, this section of the poem stores countless artifacts, and in many waves, it, like the palace, dissolves under the pressure of viewing so much. There are some heavy, chiming rhymes in here too; they semi-mock the repetitive obsession that Paxton had in his relentless design.

Things turn more subtle in section Four. To capture the arcade, I wrestled with the notion of "dead ends", the little shops that provided no other outlet for the browser. One had to turn back around and head down the main corridor to "razor-slice the city." The couplets provide a thinner frame than those we've seen, a narrow cut that tempts us with choices (the shops) but ultimately dump us "feet-clamped upon the street." In this arcade, the shops are closed, and the view is of relics "stapled to the glass." Hopefully, the form is a clear membrane for vision, like one offered in a museum.

To move into the twentieth century, and to confront the glass chain correspondence, the influences of Dadaism, futurism and a host of other influences, I chose "The Fissure" as a form. This splinter, or crack, dislocates the clear, membraned symmetry of the earlier sections. The "centre does not hold." Vision is starting to become fractured; in the lust for the modern, architects are frustrated by outdated forms. As with much of the writing in the poem, Khlebnikov influences this quite a bit. He ached for new forms, and he aspired to architecture, fissures and all. Khlebnikov was also obsessed with aerial views; I took him up on the challenge by using the fissure as a skyward leak, pushing us above the city, taking the passage to the heavens.

"The skyscraper" is an obvious mimesis of a real building, and from here, the poem heads into realms more abstract. "The Glass House" tries to dodge mimesis with fable and memory. Just as the glass house itself pulls apart notions of materiality with a simplicity in form, the poem takes on blocky stanzas that reflect corners and odd adjacencies. The leaps are fanciful, twisting proverbs and devices of apostrophe and magic realism. In the middle of the poem, a shift occurs from the attention upon the speaker, our tour guide (the watcher) to a strange scene within a glass house (the watched). Anything, after all, can happen in a glass house, and someone outside it, like a reader, might get to see it.

In the penultimate section, I'm playing with some language poetry and some symbolic demarcations. By isolating words and aligning them, both in groups and individually, as polar opposites, I intend the reader to focus on the words as materials. The poem is literally shifting "from form to material." At the top, "Time" hosts the gaze as a larger abstraction in which form shifts to tactile material. This is like a game; one has to stare at it like a puzzle, and it shifts the vision of the viewer in the way that many contemporary buildings, like those at the Light Construction show, shift one's vision.

Finally, a risk with form: I've created "Paradiso", after the Danteum. Here, one has to shatter the glass wall that separates us from heaven. Instead of Terragni's version of futurism, I've substituted in postmodernism. The first stanza of the poem disassembles itself, collecting in shards. It is both disintegrating and assembling a new form, one not so unlike postmodern buildings. This is my version of "Playtime", where the poem, as a building, is both identifiable and strange. As viewers, there are always choices to be made, places hinted to but not visited, an idea carried off quite beautifully by Jacques Tati in his film.

As a whole, the passage weaves specificity and abstraction. It is a tour of an imagined space that is palpable and illusive, much like language and glass, or in Dante's case, much like heaven, hell and limbo. The poem is a tour and an immersion within the materiality of such abstract places.

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APPENDIX A

No Spitting Up

"People in glass elevators shouldn't carry snow shovels,"
I said to Sheila, because we were in one with a lady who was.
I faced the closed doors, rejected the view of the city
without the slightest curiosity, because I already knew.
What if this woman with the shovel suddenly went crazy,
started flapping her wings like a chicken, like a fiend?
I wonder what Sheila is thinking just now, I wonder if she
has her eye on the snow shovel, how it can't rest
in this glass elevator, how it is dancing inside of itself
and making me dance. No one's paying the least attention
to the tension between me and that shovel, that shovel
and that window, that window and me.

JAMES TATE, DISTANCE FROM LOVED ONES

UNIVERSITY PRESS OF NEW ENGLAND
1990

Examples of Proverbs:

African:

Amharic:
Sore eyes are seen but a sore head is hidden.
Truth and the morning become light with time.

Bantu:
Debts make slaves.
Water never loses its way.

Ewe:
When the stomach sleeps, the man sleeps.
In crooked wood, one recognizes the artist.

Ganda:
Eat and put back.
The man of two homes dies of hunger.

Hausa:
Wealth is the cure for punishment.
Even when the king dances, the poor man says "good".

Chinese:
Almonds come to those who have no teeth.
Adversity is sometimes the rain of spring.
Be inwardly clever but outwardly clownish.
When the wagon of fortune goes well, spite and envy hang on to the wheels.

Japanese:
One good word can warm three winter months.
Even the fool has his art.
Thankless labor gains fatigue.
To be loved is to be hindered.

Korean:
Good critic-- bad worker.
Those who swallow their food whole--choke.
A man who stands behind a wall sees nothing else.
A poor horse always has a thick tail.

Mexican:

A jealous lover makes an indifferent husband.
The liar tumbles much sooner than the lame man.
Each one scratches himself with his own nails.

Jamaican:
Believe half what you see-- nothing what you hear.
When belly full, jaw must stop.
Crack bell never mend.
Buy beef, you buy bone; buy land you buy rock stone.
When cow-tail cut off, God Almighty brush flies.
Clothes cover character

Nicaraguan:
Have patience, fleas, the night is long

Yiddish:
Little children, small pleasures; big children; great troubles.
He who likes taking doesn't like giving.
Revenge is half consolation.
Too much humility is half pride.
When you go to your neighbor's, you find our what is happening in your house.

APPENDIX B

2

he allowed to ruin him. And I dreamed
I was Lowell, in a manic flight of failing
and ruthless energy, and understood
how wrong I was with a passionate exactitude
which had to be like his. A month ago,
at Saint-Gauden's house, we ran from a startling downpour

into coincidence: under a loggia built
for performances on the lawn
hulked Shaw's monument, splendid
in its plaster maquette, the ramrod-straight colonel
high above his black troops. We crouched on wet gravel
and waited out the squall; the heiratic woman

—a wingless angel?—floating horizontally
above the soldiers, her robe billowing like plaster dust,
seemed so far above us, another century's
allegorical decor, an afterthought
who'd never descend to the purely physical
soldiers, the nearly breathing bronze ranks crushed

into a terrible compression of perspective,
as if the world hurried them into the ditch.
"The unreadable," Wilde said, "is what occurs."
And when the brutish metal rears
above the wall of unglazed windows—
where, in a week, the kids will skateboard

3

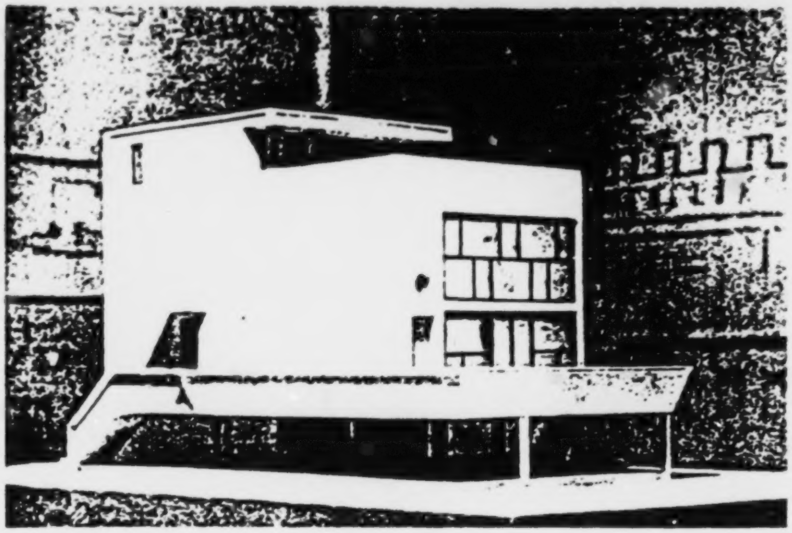
in their lovely loops and spray
their indecipherable ideograms
across the parking lot—the single standing wall
seems Roman, momentarily, an aqueduct,
all that's left of something difficult
to understand now, something Oscar

and Bosie might have posed before, for a photograph.
Aqueducts and angels, here on Main,
seem merely souvenirs; the gaps
where the windows opened once
into transients' rooms are pure sky.
It's strange how much more beautiful

the sky is to us when it's framed
by these columned openings someone meant us
to take for stone. The enormous, articulate shovel
nudges the highest row of moldings
and the whole thing wavers as though we'd dreamed it,
our black classic, and it topples all at once.

-MARK DOTY

MY ALEXANDRIA, UNIVERSITY OF
ILLINOIS PRESS, 1992



LE CORBUSIER, 1921. A "CITROHAN" HOUSE

Framework of concrete, girders made on the site and raised by a hand-winch. Hollow walls of 1½" concrete and expanded metal with a 7½" cavity; all floor slabs on the same unit of measurement; the factory-window frames, with adaptable ventilating, on the same unit. The arrangements in conformity with the running of a household; abundant lighting, all hygienic needs met and servants well cared for.

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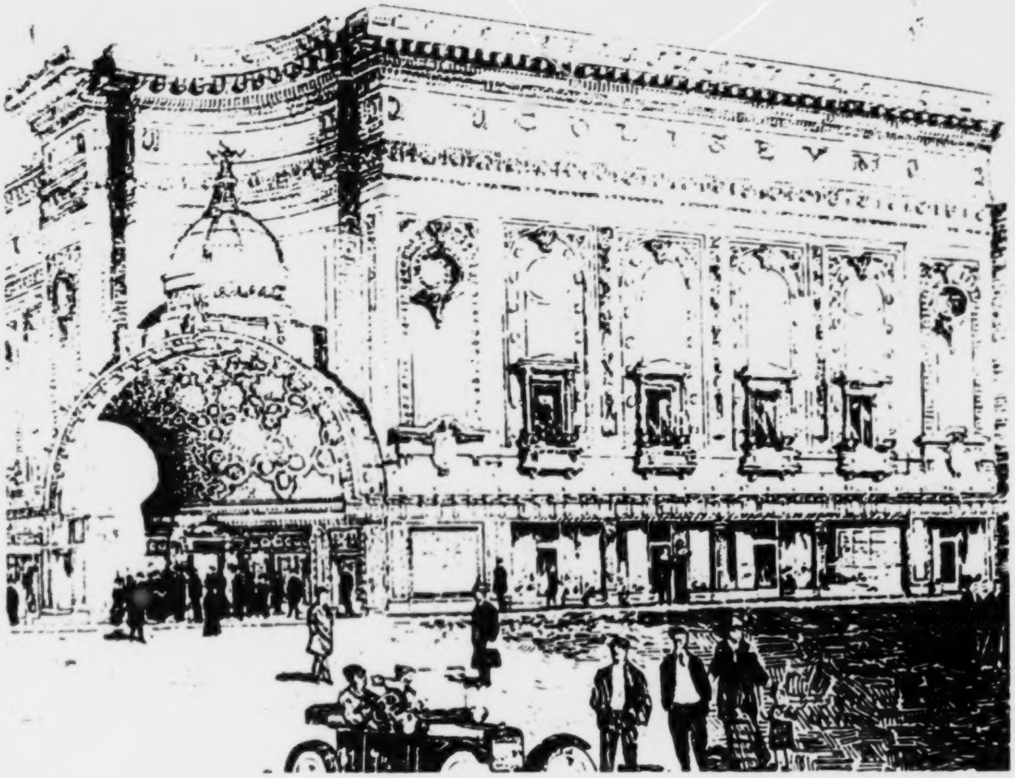
"Write without adjectives, build with smooth walls."
"The modern building is a building without adjectives."

--Massimo Bontempelli, 1920's



3. Coliseum Theater, Seattle, 1914-16 (altered), B. Marcus Priteca. This perspective drawing of the exterior illustrates Priteca's talents as a delineator. The original entrance canopy was later replaced. The building no longer functions as a theater, but is instead occupied by retail uses. *(Richard E. McCann Collection.)*

Vancouver, British Columbia (1916-17; destroyed), with its French Renaissance elements and its seating capacity of 1,800, was considered at the time to be the most richly embellished and efficient theater of the Pantages chain. Priteca also designed Seattle's brick and terra-cotta Orpheum Theater (1926-27; destroyed); and in association with Frederick J. Peters and the Chicago firm of Rapp & Rapp he designed the Seattle (Paramount) Theater apartment and commercial building (1927-28), for businessman L. N. Rosenbaum. The Tacoma Pantages Theater (ca. 1916-18; altered) is the earliest extant example of the collaboration between the vaudeville entrepreneur and Priteca.

Priteca's Hollywood Pantages Theater (1929-30), sited in Hollywood, California, represented a radical departure from his favored classical expression; it is a masterpiece of Art Deco design. He viewed his work on this theater as a quest for a design which would "best exemplify America of the moment. Effort centered upon motifs that were modern—never futuristic, yet based on time-tested classiccism [sic] of enduring good taste and beauty." Priteca hoped the theater would be a synthesis of comfort, pleasure, and beauty. The Hollywood Pantages, built at the apogee of Priteca's career, was the last movie palace to open in Hollywood. It stands as a memorial to the Pantages era and, in the opinion of Richard

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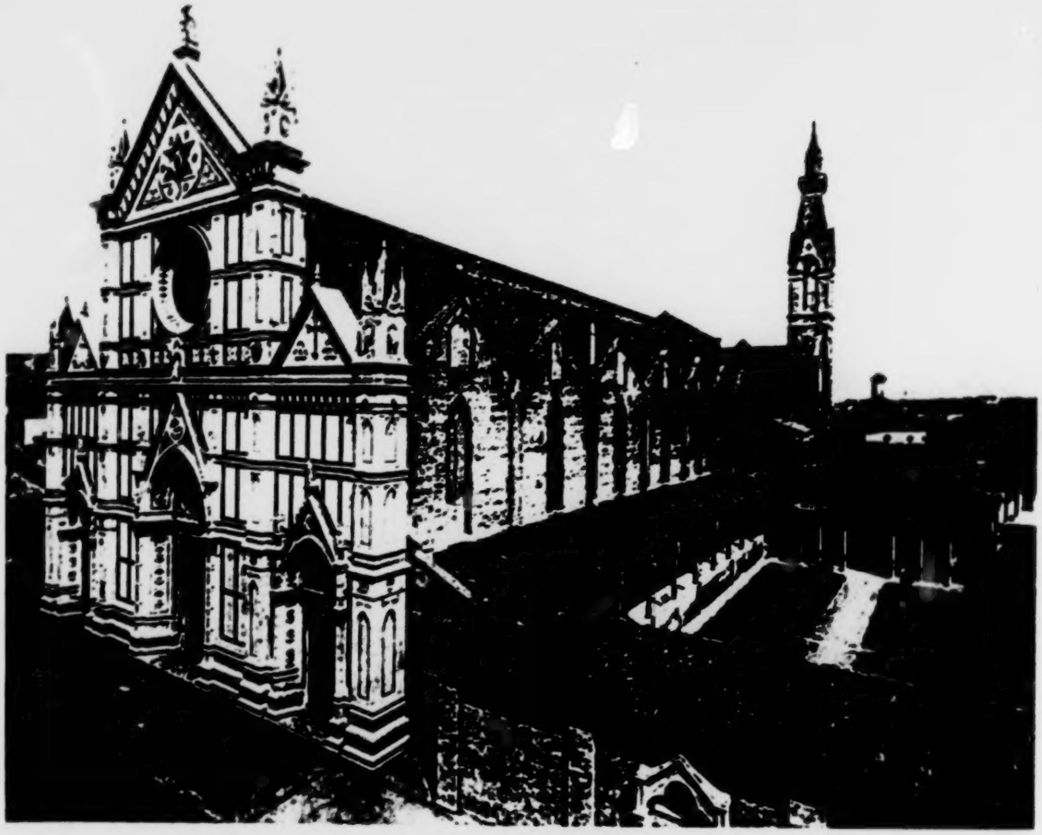
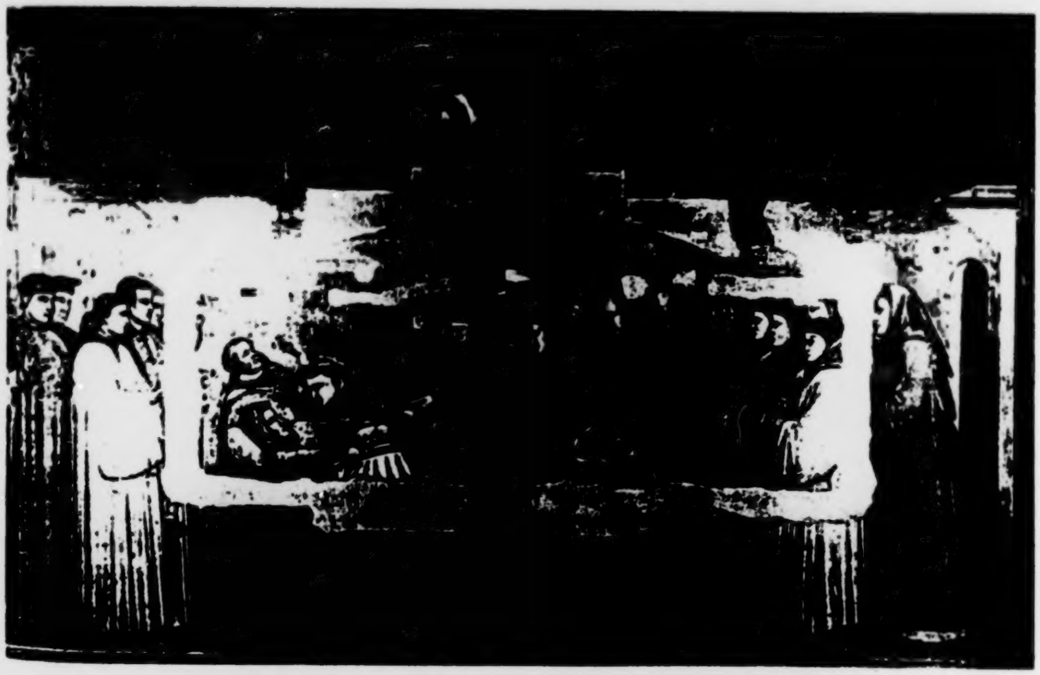


Church of Santa Croce, with Pazzi Chapel



Santa Croce: *The Death of Saint Francis*, by Giotto (Bardi Chapel)

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APPENDIX C

Some Uses of Proverbs

FRANK J. D'ANGELO

A FEW YEARS AGO, I was watching the TV news show with the magazine format, *60 Minutes*. One particular segment dealt with the busing controversy in Boston. Black school-children from Roxbury were being bussed into the schools of South Boston, and the residents were up in arms. As I watched, one vehement Irishman being interviewed by CBS was exclaiming: "Blacks have access to everything we have—pools, public facilities, and places of entertainment. What more do they want? Now they want our neighborhood schools! Why don't they develop and take pride in their own schools and neighborhoods? It seems that the ethnic group that makes the most noise gets the most attention from the Federal Government. *The wheel that squeaks the loudest gets the most grease.*"

This incident impressed upon me the idea that proverbs are not just outworn sentiments from an earlier age, but that they are still being used by people every day to win arguments. Because proverbs are so familiar, they often win uncritical acceptance from the audience, and I am certain that many viewers of the TV program were duly impressed with the Irishman's argument.

DEFINITION OF PROVERBS

Proverbs are short, concise sayings in common use which express some obvious and familiar truth or experience in striking form. The word *proverb* comes from the Latin word *proverbium*, a combination of the prefix *pro* meaning "forth," and the root *verbum*, which means "word." Thus the literal meaning of the word proverb is "a set of words put forth." Some synonyms often used for the word *proverb* are *saying*, *sententia*, *maxim*, *aphorism*, *adage*, *motto*, and *epigram*. The word *saying* is the most general term of all. It refers to any wise or truthful saying that is repeated often. *Sententiae* are almost indistinguishable from proverbs, but a *sententia*, instead of coming from the common man, has its origin in learned men. Alexander Pope's "A little learning is a dangerous thing" is a typical example. A *maxim* is a saying, derived from practical experience, that serves as a rule of conduct. Thus the expression, "Judge not, that you be not judged," is a succinct statement of a fundamental principle or rule. Like the maxim, the *aphorism* is a general truth or principle, but one that is not intended as a guideline for behavior. A good example of an aphorism is the expression, "He that cannot conceal his wisdom is a fool." An *adage* is a popular saying that has become acceptable as a truth through long use. The oft-quoted adage, "When the cat's away, the mice will play," exemplifies this popular saying. A *motto* is a terse saying that is used as a guiding principle or idea by a particular group of people. The *motto*, "In God we trust," which is found on U.S. coins, is used in just this way. An *epigram* is a concise and witty statement, often cleverly phrased, that is paradoxical or satirical. A good example would be the expression, "The only way to get rid of a temptation is to yield to it." It should be remembered that these distinctions cannot be maintained consistently, be-

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cause one form is constantly merging with the next.

SOURCE OF PROVERBS

Almost every nation has its share of proverbs and wise sayings. Proverbs can be found in the oldest literary works—in Sanskrit, Hebrew, Greek, and Roman literature, in the Bible, in the works of Aristophanes, in Chaucer and in Shakespeare, in Erasmus, Cervantes, Ben Jonson, Alexander Pope, Sir Walter Scott, Benjamin Franklin, Ralph Waldo Emerson, Henry David Thoreau, and Robert Frost.

The source of proverbs is generally considered to be the folk wisdom of the common man. Some scholars believe that proverbs were originally supposed to be taken literally but that gradually the advice they contained was generalized to such an extent that they became widely applicable to a variety of situations. Many proverbs are literal statements which contain some kind of sage advice based on everyday observations. These are wise and instructive *apothegms*, such as "Live and learn," "Mistakes will happen," and "There's no fool like an old fool," which were repeated so often that they took on the status of proverbs. Some proverbs are simple reports of everyday occurrences. Many of these have figurative meanings: "Chickens always come home to roost," "April showers bring May flowers," "You can lead a horse to water but you can't make him drink," "A new broom sweeps clean," "A shady lane breeds mud."

Closely related to the proverb and the wise saying are expressions which seem to have most of the characteristics of the proverb except grammatical form:

proverbial phrases,
  to break the ice
  to touch a sore spot
  to call his bluff
proverbial comparisons,
  as old as the hills
  as quiet as a mouse
  as good as gold
clichés and conventional phrases
  null and void
  bag and baggage
  to add insult to injury

The distinction between clichés and proverbial phrases and comparisons, like the distinctions between the proverb and other kinds of wise sayings, however, are difficult to maintain.

FORM OF PROVERBS

Proverbs are characterized by conciseness of form ("Boys will be boys," "Practice makes perfect") and by memorable and striking rhetorical techniques:

Alliteration
  Friendship that flames goes out in a flash.
  Better bend than break.
  Love laughs at locksmiths.
Rhyme
  Man *proposes*, God *disposes*.
  Borrowing brings *sorrowing*.
  Blab is not *cheer*; froth is not *beer*.
Metaphor and Simile
  The leopard cannot change his spots.
  Beauty fades like a flower.
  Lost credit is like a broken mirror.
Repetition
  The best *art* conceals *art*.
  A *poor* spirit is *poorer* than a *poor* purse.
  What costs *little* is *little* esteemed.
Ellipsis
  The poor man seeks food, and the rich man appetite.
  Blood is inherited and virtue acquired.
  Generals pray for war and doctors for diseases.
Parallelism
  Life is short and time is swift.
  Age and wedlock tame man and beast.

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Brandy is lead in the morning,
silver at noon, gold at night.

Antithesis

There is no pleasure without pain.
Beauty is potent, but money is
omnipotent.
Use soft words and hard arguments.

Puns

Better to be a-cold than a cuckold.
Call me cousin, but cozen me not.
Never pick a quarrel; pick the
banjo instead.

EARLY USES TO PROVERBS

To early rhetoricians and scholars, we owe the existence of many proverbs. Scribes copied them in old manuscripts. Proverbs were taught in Anglo-Saxon schools, included in medieval textbooks, scribbled into commonplace books, illustrated in tapestries, and used to teach Latin. Students used them for stylistic embellishment, as beginnings and endings of themes, as amplifying material for subject matter, as a means of proof in formal arguments, and as a means of learning to paraphrase.[1]

One important value of proverbs, not to be overlooked, is that they embody habits of thought, customs, and moral values. They are a kind of consensus of opinion, manifest truths that may be useful in the conduct of life. Christ used them in his parables ("By their fruits shall ye know them"). They sparkled like magnificent jewels in the conversations and writings of wise men. Sermons were enriched by them. In brief, they were used to develop humanistic values and to endow men with moral and cultural virtues. Pagan and Christian moralists, who believed in a thorough inculcation of ethical and moral virtues such as temperance, wisdom, justice, fortitude, and prudence, advocated the use of proverbs.[2]

SOME USES OF PROVERBS

Proverbs, then, had a very important educational function in the past, and I believe that they can still be useful in the composition classroom today. In the remainder of this paper, I would like to explore a few of those uses.

One use of proverbs is for rhetorical invention.[3] Because proverbs tend to cluster into subject-matter areas, they can be used as a source of material for writing or speaking. Many ethical ideas derived from proverbs can be effectively applied to contemporary situations. Successful writers wisely select some of the best ideas of the past (since proverbs are a repository of folk wisdom) and use them for their own purposes. Many books of proverbs have alphabetical listings by key ideas that can help the writer in his or her search for material. Below are a few examples of proverbs arranged according to theme:

Action

Actions speak louder than words.
One good action excuses a dozen
bad ones.
Suit the action to the word.
Bad actions lead to worse reactions.
People are remembered by good
actions, not by good intentions.

Adversity

Sweet are the uses of adversity.
Adversity has not friends.
Be patient in adversity and
cautious in prosperity.
Adversity makes men, prosperity
monsters.
Adversity makes us wise—until the
next misfortune comes.

Advice

People give nothing so willingly as
advice.
The advice of fools is worthless.
The worst men are often the best
advisers.

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[1] *The Oxford Dictionary of English Proverbs*, 2nd ed. (Oxford: Clarendon Press, 1948), p. x.

[2] Sister Joan Marie Lechner, O.S.U., *Renaissance Concepts of the Commonplace* (New York: Pageant Press, 1962), pp. 202-208.

[3] Lechner, pp. 159, 162, 179.

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When a thing is done, advice
comes too late.
What the poor need is less advice
and more helping hands.
Bribery
Every man has his price.
Elect the best Congressmen that
money can buy.
Money will soothe an itching palm.
Money and friendship bribe justice.
To win the lady first bribe her
maid.
Crime
No crime is founded upon reason.
It is unlawful to overcome crime
by crime.
Crime must be concealed by crime.
The greater the man, the greater
the crime.
If you share your friend's crime,
you make it your own.

If writers need something to say, they merely go through the thematic headings and choose the material appropriate to their purposes. In this way, they can obtain ideas about innumerable subjects.

During the Renaissance, students kept commonplace books which contained proverbs, maxims, proverbial comparisons, rare words, witty sayings, and ideas and materials of various sorts. These books gave ample material for themes. The material they collected was often arranged under contrasting headings: love/hate, life/death, wisdom/foolishness, courage/fear, persuasion/force, words/deeds, knowledge/ignorance, success/failure, reason/instinct, pleasure/pain. Ideas classified in this manner were easy to get at for subsequent invention, and the ideas collected under these headings aided fluency and copiousness.[4]

One kind of exercise that classical rhetoricians used to assist memory for the process of invention and to facilitate fluency in the handling of ideas was an oral exercise in the form of a dialogue:[5]

Question—What is it that will overcome all things?
Answer—Love.
Question—Can you quote the proverb to support this?
Answer—Love conquers all things.
Question—What is it that will overcome learning and make it a part of us?
Answer—The love of learning or the love of books.
Question—Can you prove this from a quotation?
Answer—Love conquers all things.

Another use of proverbs is in learning to paraphrase. A one-line paraphrase of a proverb can exemplify stylistic differences between the two versions of the proverb and can also be an exercise in interpretation. The following examples illustrate this exercise:

Empty vessels make the most sound.
People who talk the most are often the most ignorant.

A stitch in time saves nine.
Troubles will quickly multiply if you do not handle them at once.

Make hay while the sun shines.
You've got to get things done while the opportunity is ripe.

One man's meat is another man's poison.
Just because one person likes something is no reason to believe that another will like it.

Every cloud has a silver lining.
If you look for the bright side of things, you will find it.

A third exercise consists in using proverbs as thematic statements to develop miniature themes that follow a prescribed order:*

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[4] Lechner, pp. 179-183.

[5] John Brinsley, *Ludus Literarius* (Menston, England: The Scholar Press Limited, 1968), p. 143.

1. Quote the proverb.
2. Discuss its meaning.
3. Give a proverb with a similar meaning.
4. Discuss the proverb's origin in practical experience.
5. Illustrate its use today in your own or someone else's experience.

In this day and age, in which many of our educational endeavors may be characterized as "value-free," we could do worse than revitalize an important part of the Western liberal-education tradition. Like other forms of rhetoric, proverbs may be used as "impersonal vehicles" for communication. But their best use may be as what Kenneth Burke calls, "equipment for living." As such, they still have a vital relevance for modern man in the presentation and preservation of ethical values.

Arizona State University
Tempe

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*Adapted from: Donald Lemen Clark, *John Milton at St. Paul's School* (N. Y.: Columbia University Press, 1948), pp. 234-235; *Rhetoric in Greco-Roman Education* (Morningside Heights, N.Y.: Columbia University Press, 1957), pp. 188-190.

INTERNATIONAL SOCIETY FOR THE HISTORY OF RHETORIC

The new International Society for the History of Rhetoric was formally established at a meeting held at the Eidgenossische Technische Hochschule, Zurich, Switzerland, June 29-July 2, 1977. The inaugural meeting was attended by 120 scholars from nine countries.

As stated in the Constitution adopted at the meeting, "The purpose of this Society is to promote the study of both the theory and practice of rhetoric in all periods and languages and its relationships with poetics, philosophy, politics, religion, law, and other aspects of the cultural context. The Society is not concerned with the furthering of practical rhetorical skills as such."

The Society will meet biennially, with the 1979 conference planned for a site in Europe yet to be chosen. Publications being planned include the *Acta* of each biennial conference, a continuing international bibliography, and a retrospective bibliography.

Membership is open to any individual or institution subscribing to the aims of the Society. Dues are as follows: regular membership, $10.00; student membership, $4.00. Dues may be sent to the American Treasurer, Lloyd Bitzer, 6142 Vilas Hall, University of Wisconsin, Madison, WI 53706.

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From Experiencing Architecture,
Steen Eiler Rasmussen

CHAPTER I

Basic Observations

For centuries architecture, painting and sculpture have been called the Fine Arts, that is to say the arts which are concerned with "the beautiful" and appeal to the eye, just as music appeals to the ear. And indeed most people judge architecture by its external appearance, just as books on the subject are usually illustrated with pictures of building exteriors.

When an architect judges a building its appearance is only one of several factors which interest him. He studies plans, sections and elevations and maintains that, if it is to be a good building, these must harmonize with each other. Just what he means by this is not easy to explain. At any rate, not everyone can understand it any more than everyone can visualize a building merely by looking at the plans. A man to whom I was explaining a project for a house he wanted to build, said deprecatingly: "I really *don't like* sections." He was a rather delicate person and I got the impression that the mere idea of cutting into anything was repulsive to him. But his reluctance may have arisen from the correct idea of architecture as something indivisible, something you cannot separate into a number of elements. Architecture is not produced simply by adding plans and sections to elevations. It is something else and something more. It is impossible to explain precisely what it is—its limits are by no means well-defined. On the whole, art should not be explained; it must be experienced. But by means of words it is possible to help others to experience it, and that is what I shall attempt to do here.

The architect works with form and mass just as the sculptor does, and like the painter he works with color. But alone of the three, his is a functional art. It solves practical problems. It creates tools or implements for human beings and utility plays a decisive role in judging it.

Architecture is a very special functional art; it confines space so we can dwell in it, creates the framework around our lives. In other words, the difference between sculpture and architecture is not that the former is concerned with more organic forms, the latter with more abstract. Even the most abstract piece of sculpture, limited to purely geometric shapes, does not become architecture. It lacks a decisive factor: utility.

The master photographer, Andreas Feininger, has taken a picture showing a cemetery in the Brooklyn-Queens area of New York. The tombstones stand crowded together exactly like skyscrapers in an American city, the very skyscrapers which form the distant background of the photograph.

Seen from an aeroplane high in the air, even the most gigantic skyscraper is only a tall stone block, a mere sculptural form, not a real building in which people can live. But as the plane descends from the great heights there will be one moment when the buildings change character completely. Suddenly they take on human scale, become houses for human beings like ourselves, not the tiny dolls observed from the heights. This strange transformation takes place at the instant when the contours of the buildings begin to rise above the horizon so that we get a side view of them instead of looking down on them. The buildings pass into a new stage of existence, become architecture in place of neat toys—for architecture means shapes formed around man, formed to be lived in, not merely to be seen from the outside.

The architect is a sort of theatrical producer, the man who plans the setting for our lives. Innumerable circumstances are dependent on the way he arranges this setting for us. When his intentions succeed, he is like the perfect host who provides every comfort for his guests so that living with him is a happy experience. But his producer job is difficult for several reasons. First of all, the actors are quite ordinary people. He must be aware of their natural way of acting; otherwise the whole thing will be a fiasco. That which may be quite right and natural in one cultural environment can easily be wrong in another; what is fitting and

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proper in one generation becomes ridiculous in the next when people have acquired new tastes and habits. This is clearly demonstrated by the picture of the Danish Renaissance king,

Christian IV—as interpreted by a popular Danish actor—riding a bicycle. The costume, of its kind, is undoubtedly a handsome one, and the bicycle too is of the best. But they simply do not go together. In the same way, it is impossible to take over the beautiful architecture of a past era; it becomes false and pretentious when people can no longer live up to it.

The 19th century had the very ill-advised idea that to obtain the best results it was necessary only to copy fine old buildings that were universally admired. But when in a modern city you build a modern office building with a façade that is a faithful copy of a Venetian palace, it becomes quite meaningless even though its prototype is charming—charming, that is, in Venice on the right site and in the right surroundings.

Another great difficulty is that the architect's work is intended to live on into a distant future. He sets the stage for a long, slowmoving performance which must be adaptable enough to accommodate unforeseen improvisations. His building should preferably be ahead of its time when planned so that it will be in keeping with the times as long as it stands.

The architect also has something in common with the landscape gardener. Everyone can grasp the fact that the gardener's success depends on whether or not the plants he selects for the garden thrive there. No matter how beautiful his conception of a garden may be it will, nevertheless, be a failure if it is not the right environment for the plants, if they cannot flourish in it. The architect, too, works with living things—with human beings, who are much more incalculable than plants. If they cannot thrive in his house its apparent beauty will be of no avail—without life it becomes a monstrosity. It will be neglected, fall into disrepair and change into something quite different from what he intended. Indeed, one of the proofs of good architecture is that it is being utilized as the architect had planned.

Finally, there is a very important feature which must not be overlooked in any attempt to define the true nature of architecture. That is the creative process, how the building comes into existence. Architecture is not produced by the artist himself as, for instance, paintings are.

A painter's sketch is a purely personal document; his brush stroke is as individual as his hand-writing; an imitation of it is a forgery. This is not true of architecture. The architect remains anonymously in the background. Here again he resembles the

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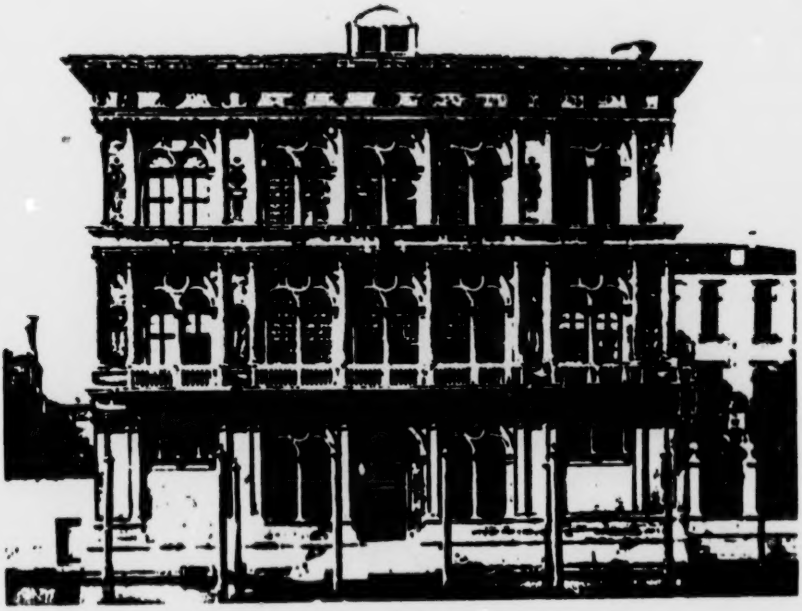
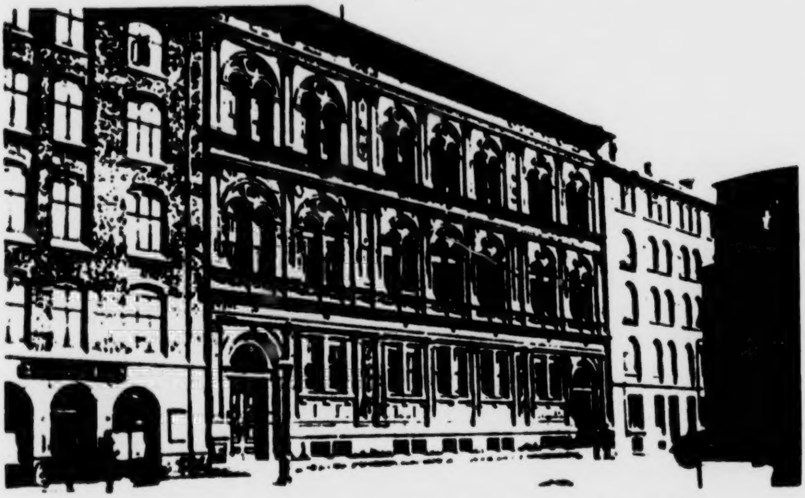


Palazzo Vendramin-Calergi, Venice. Completed 1509



23 Havnegade, Copenhagen. Completed 1865. Architect F. Meldahl

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theatrical producer. His drawings are not an end in themselves, a work of art, but simply a set of instructions, an aid to the craftsmen who construct his buildings. He delivers a number of completely impersonal plan drawings and typewritten specifications. They must be so unequivocal that there will be no doubt about the construction. He composes the music which others will play. Furthermore, in order to understand architecture fully, it must be remembered that the people who play it are not sensitive musicians interpreting another's score—giving it special phrasing, accentuating one thing or another in the work. On the contrary, they are a multitude of ordinary people who, like ants toiling together to build an ant-hill, quite impersonally contribute their particular skills to the whole, often without understanding that which they are helping to create. Behind them is the architect who organizes the work, and architecture might well be called an art of organization. The building is produced like a motion picture without star performers, a sort of documentary film with ordinary people playing all the parts.

Compared with other branches of art, all this may seem quite negative; architecture is incapable of communicating an intimate, personal message from one person to another; it entirely lacks emotional sensitivity. But this very fact leads to something positive. The architect is forced to seek a form which is more explicit and finished than a sketch or personal study. Therefore, architecture has a special quality of its own and great clarity. The fact that rhythm and harmony have appeared at all in architecture —whether a medieval cathedral or the most modern steel-frame building—must be attributed to the organization which is the underlying idea of the art.

No other art employs a colder more abstract form, but at the same time no other art is so intimately connected with man's daily life from the cradle to the grave.

Architecture is produced by ordinary people, for ordinary people; therefore it should be easily comprehensible to all. It is based on a number of human instincts, on discoveries and ex-

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Lever House, New York City, Skidmore, Owings & Merrill, architects Example of harmony and rhythm as the result of the creative process in architecture

periences common to all of us at a very early stage in our lives —above all, our relation to inanimate things. This can perhaps best be illustrated by comparison with animals.

Certain natural capacities with which many animals are born, man acquires only by patient endeavor. It takes years for a small child to learn to stand, to walk, to jump, to swim. On the other hand, the human being very soon extends his mastery to include things which are apart from himself. With the help of all kinds of implements he develops his efficiency and enlarges his scope of action in a way no animal can emulate.

In his helplessness, the baby begins by tasting things, touching them, handling them, crawling on them, toddling over them, to find out what they are like, whether friendly or hostile. But he quickly learns to use all sorts of contrivances and thereby avoids some of the more unpleasant experiences.

Soon the child becomes quite adept in the employment of these things. He seems to project his nerves, all his senses, deep into the lifeless objects. Confronted by a wall which is so high that he cannot reach up to feel the top, he nevertheless obtains

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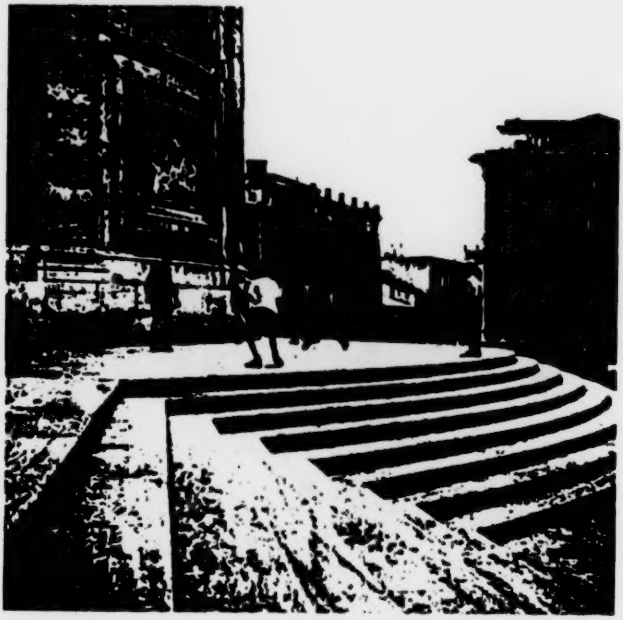

Boys playing a ball game on the top step of the stairway behind the church of S. Maria Maggiore in Rome (1952)

an impression of what it is like by throwing his ball against it. In this way he discovers that it is entirely different from a tautly stretched piece of canvas or paper. With the help of the ball he receives an impression of the hardness and solidity of the wall.

The enormous church of S. Maria Maggiore stands on one of Rome's seven famous hills. Originally the site was very unkempt, as can be seen in an old fresco painting in the Vatican. Later, the slopes were smoothed and articulated with a flight of steps up to the apse of the basilica. The many tourists who are brought to the church on sight-seeing tours hardly notice the unique character of the surroundings. They simply check off one of the starred numbers in their guide-books and hasten on to the next one. But they do not experience the place in the way some boys I saw there a few years ago did. I imagine they were pupils from a nearby monastery school. They had a recess at eleven o'clock

View from the top step behind S. Maria Maggiore, Rome (1952)

and employed the time playing a very special kind of ball game on the broad terrace at the top of the stairs. It was apparently a kind of football but they also utilized the wall in the game, as in squash—a curved wall, which they played against with great virtuosity. When the ball was *out*, it was most decidedly out, bouncing down all the steps and rolling several hundred feet further on with an eager boy rushing after it, in and out among motor cars and Vespas down near the great obelisk.

I do not claim that these Italian youngsters learned more about architecture than the tourists did. But quite unconsciously they experienced certain basic elements of architecture: the horizontal planes and the vertical walls above the slopes. And they learned to play on these elements. As I sat in the shade watching them, I sensed the whole three-dimensional composition as never before. At a quarter past eleven the boys dashed off, shouting and

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laughing. The great basilica stood once more in silent grandeur. In similar fashion the child familiarizes himself with all sorts of playthings which increase his opportunities to experience his surroundings. If he sucks his finger and sticks it in the air, he discovers what the wind is like in the low strata of air in which he moves about. But with a kite he has an aerial feeler out high up in the atmosphere. He is one with his hoop, his scooter, his bicycle. By a variety of experiences he quite instinctively learns to judge things according to weight, solidity, texture, heat-conducting ability.

Before throwing a stone he first gets the feel of it, turning it over and over until he has the right grip on it, and then weighing it in his hand. After doing this often enough, he is able to tell what a stone is like without touching it at all; a mere glance is sufficient.

When we see a spherical object we do not simply note its spherical shape. While observing it we seem to pass our hands over it in order to experience its various characteristics.

Though the many kinds of balls and marbles that are used in various games have the same geometric shape, we recognize them as objects of extremely different character. Their size alone, in relation to the human hand, not only gives them different quantities but different qualities. Color plays a part, but weight and strength are much more important. The large football, made to be kicked, is essentially different from the little white tennis ball that is struck by the hand, or by the racquet which is simply an extension of the hand.

At an early age the child discovers that some things are hard, others soft, and some so plastic that they can be kneaded and moulded by hand. He learns that the hard ones can be ground by still harder materials so that they become sharp and pointed, and therefore objects cut like a diamond are perceived as hard. Quite the reverse, pliable stuffs, like bread dough, can be given rounded forms, and no matter how you cut them up, the section will always show an unbroken curve.

Various balls used in English ball games

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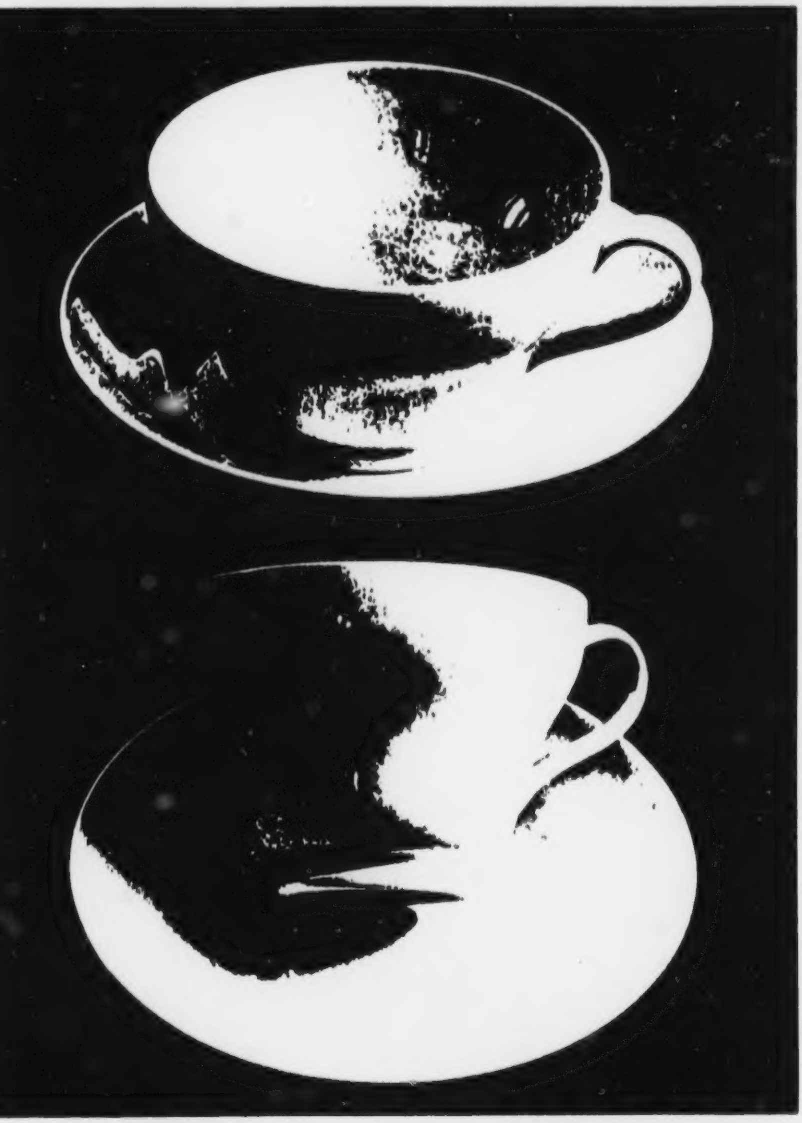
From such observations we learn that there are certain forms which are called hard and others soft, regardless of whether the materials they are made of are actually soft or hard.

As an example of a "soft" form in a hard material we can take a so-called pear-shaped cup from the English firm Wedgwood. It is an old model but it is impossible to say when the form first appeared. It is very alien to the classical shapes which the founder of the firm, Josiah Wedgwood, preferred to all others. It may be that it is of Persian ancestry and was permitted to live on in English guise because it suits the potter's craft so well. You feel that you can actually see how it was drawn up on the potter's wheel, how the soft clay humbly submitted to the hands of the potter, suffering itself to be pressed in below so that it could swell out above. The handle is not cast in a mould, as on most cups today, but formed with the fingers. To avoid rims, the plastic clay is squeezed out like toothpaste from a tube, shaped over the potter's fingers and then fixed to the cup in a slender curve which is pleasant to grasp. A man at the Wedgwood works, who sat making these handles, said to me that it was lovely work and that he enjoyed curving the handle in towards the pear-shaped cup. He knew no words for more complicated sensations; otherwise he might have said that he liked the rhythm in cup and handle. But though he could not express this, he had experienced it. When we say that such a cup has a "soft" form, it is entirely due to a series of experiences we gathered in childhood, which taught us how soft and hard materials respond to manipulation. Though the cup, after firing, is hard, we are nevertheless aware that it was soft at the time it was shaped.

In this instance we have a soft thing that was hardened by a special process, namely firing, and it is easy to understand why we continue to think of it as soft. But even in cases where the material used was hard from the very beginning, we can speak of soft forms. And this conception of soft and hard forms, acquired from objects small enough to handle, is applied even to the largest structures.



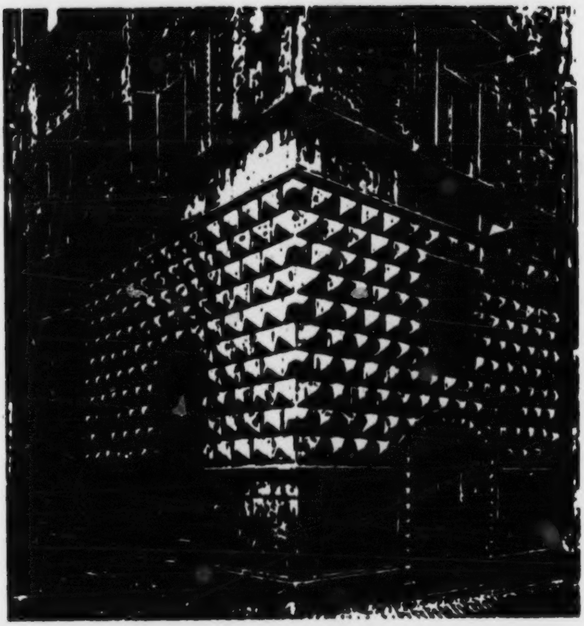
So-called pear-shaped cup manufactured by Wedgwood
The cup was soft when it was shaped; after firing the material became hard but the form itself can still be described as soft

An English bridge of the great canal-building period at the beginning of the 19th century. Example of a "soft" form made of brick

As a typical example of a structure with soft forms we can take an English bridge built at the beginning of the nineteenth century. It is obviously made of brick, that is of a material that was hard at the time the bridge was constructed. Nevertheless it is impossible to rid yourself of the impression of something that was kneaded and moulded, something that responded to pressure in the same way the banks of streams and rivers do, acquiring the form of winding curves as the rushing water carries off masses of clay and gravel from one bank and deposits it on the other. The bridge has a double function: it is a raised roadway and a navigation portal that seems to have been hollowed out by the pressure of running water.

As an example of the opposite quality, that is, a structure whose form is manifestly "hard", we select the Roman Palazzo Punta di Diamanti. Not only is the entire building mass a clearcut prism, but the lower part is made of stone with faceted

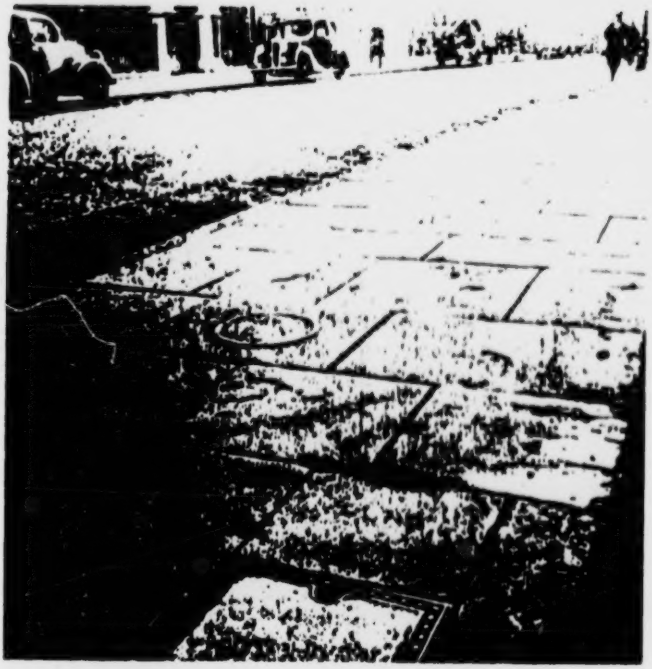
Palazzo Punta di Diamanti in Rome. A building with a typically "hard" form



rustications like projecting pyramids—so-called diamond-shaped ashlar. Here, the detail has been directly taken over from a tiny object and employed on a much larger scale.

Certain periods have preferred hard effects of this kind while others have endeavored to make their buildings "soft," and there is much architecture which sets the soft against the hard for the sake of contrast.

Form can also give an impression of heaviness or lightness. A wall built of large stones, which we realize must have required great effort to bring to the site and put in place, appears heavy to us. A smooth wall seems light, even though it may have necessitated much harder work and actually weigh more than the stone wall. We intuitively feel that granite walls are heavier than brick ones without having any idea of their respective weights. Ashlar masonry with deep joints is often imitated in brick, not to produce a deception but simply as a means of artistic expression.



Sidewalk
Bloomsbur
Lond

Impressions of hardness and softness, of heaviness and lightness, are connected with the surface character of materials. There are innumerable kinds of surfaces from the coarsest to the finest. If building materials were graded according to degrees of roughness, there would be a great number of them with almost imperceptible differences. At one end of the scale would be undressed timber and pebble-dash, at the other polished stone and smoothly varnished surfaces.

It may not be surprising that we can see such differences with the naked eye but it is certainly remarkable that, without touching the materials, we are aware of the essential difference between such things as fired clay, crystalline stone, and concrete.

In Denmark today sidewalks are often paved with several rows of concrete slabs separated by rows of granite cobblestones. It is

Sidewalk in Aarhus, Denmark

undoubtedly practical, when necessary to lift the slab of concrete, to be able to rest the crowbar against the hard granite, which is less likely to crumble. But the combination gives a singularly inharmonious surface. Granite and concrete do not mix well; you can almost feel how unpleasant it is right through the soles of your shoes—the two materials are of such different grades of smoothness. And when, as sometimes happens, this pavement is flanked by broad strips of asphalt or gravel and edged with kerbstone, the modern Danish sidewalk becomes a veritable sample collection of paving materials, not to be compared with the pavements of more civilized eras, which are pleasing to the eye and comfortable under foot. The Londoner calls his sidewalk the "pavement," and a more cultivated example of paving can hardly be found.

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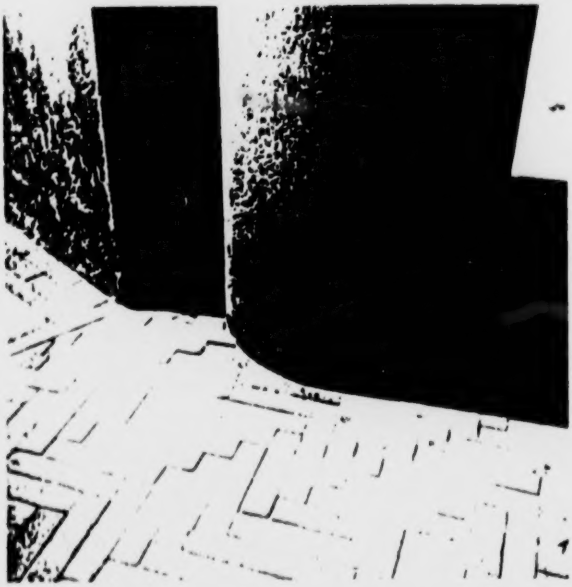
Clinker paving at The Hague



Clinker paved colonnade in Copenhagen. Heavy granite column stands directly on the lighter paving material, shattering the pattern of the brick paving

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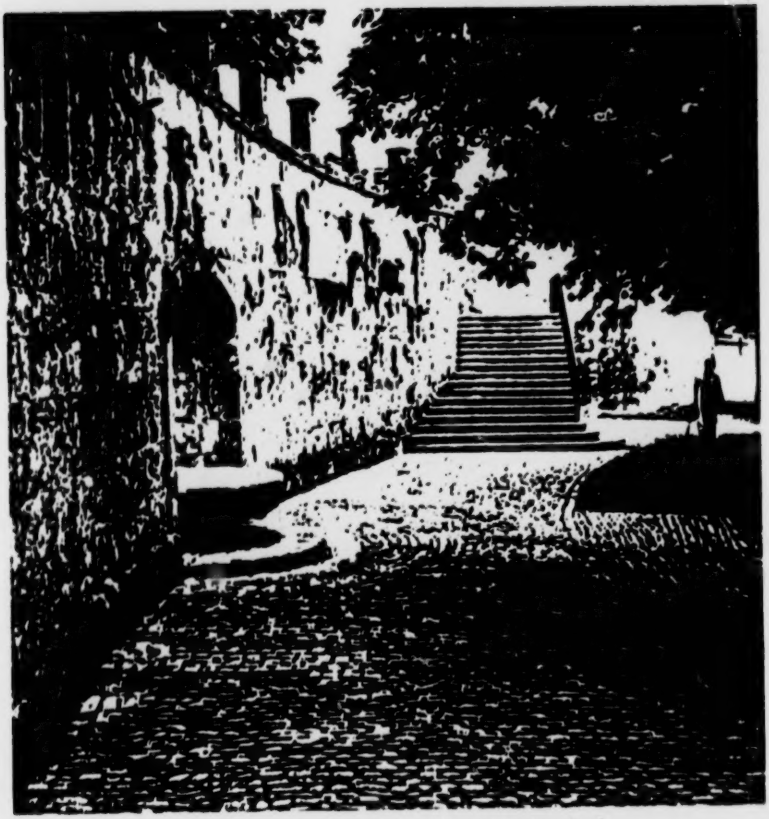
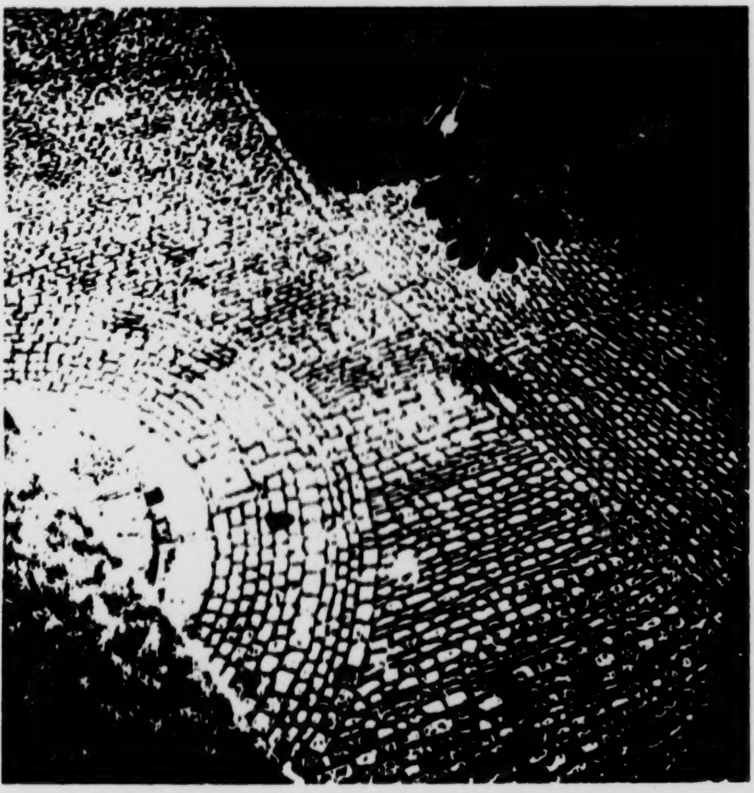


Cobblestone paved square in Fribourg, Switzerland

In Switzerland the cobblestone paving is exceedingly handsome, as can be seen in the photographs of a tranquil little square in Fribourg where the beautifully laid pavement gives æsthetic pleasure to the eye and has its perfect foil in the uniform pale yellow limestone of the surrounding walls and the fountain. A great variety of materials can be used for paving with very satisfactory results, but they cannot be combined or used arbitrarily. In Holland they use clinkers in the streets and on the highways and secure a neat and pleasant surface. But when the same material is used as a foundation for granite pillars, as in

Stormgade in Copenhagen, the effect is far from good. Not only do the clinkers become chipped, but you have the uncomfortable feeling that the heavy pillars are sinking into the softer material.

At about the time when the child becomes aware of the textures of various materials he also forms an idea of tautness as opposed to slackness. The boy who makes a bow and draws the string so tightly that it hums, enjoys its tautness and receives an impression for life of a tense curve and when he sees a fishing net hung up to dry, he experiences how reposeful its slack and heavy lines are.



Square in Fribourg, Switzerland. Paving seen from the terrace above

Fishing net hung up to dry in Venice
The swelling forms of domes seen through the pendent lines of the net

There are monumental structures of the greatest simplicity which produce only a single effect, such as hardness or softness. But most buildings consist of a combination of hard and soft, light and heavy, taut and slack, and of many kinds of surfaces. These are all elements of architecture, some of the things the architect can call into play. And to experience architecture, you must be aware of all of these elements.

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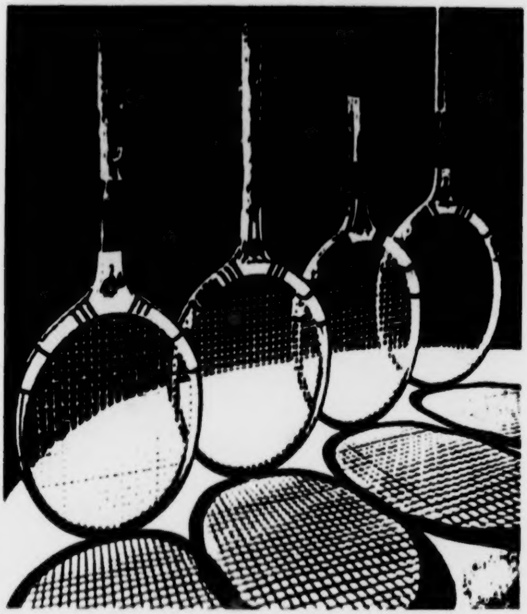

Every instrument has its own physiognomy. The sight of a tennis racquet provokes a feeling of vitality

From these individual qualities let us now turn to the things themselves.

When we regard the tools produced by man—using the term tools in the broad sense which includes buildings and their rooms—we find that by means of material, form, color and other perceptive qualities, man has been able to give each tool its individual character. Each one seems to have its own personality which fairly speaks to us like a helpful friend, a good comrade. And each implement has its own particular effect upon our minds.

In this way, man first puts his stamp on the implements he makes and thereafter the implements exert their influence on man. They become more than purely useful articles. Besides expanding our field of action, they increase our vitality. A tennis racquet can help us to strike a ball better than we can do with the hand alone. This, however, is not the most important thing about it. As a matter of fact, striking balls is in itself of no particular

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The English ridingboot has an aristocratic air and it produces an effect of costliness and elegance

value to anyone. But using the racquet gives us a feeling of being alive, fills us with energy and exuberance. The sight of it alone stimulates the tennis player in a way that is difficult to describe. But if we turn to another piece of sports equipment—the riding boot, for example,—we will immediately realize what different sensations the various things arouse. There is something aristocratic about an English riding boot. It's a rather odd-looking leather sheath, only faintly reminiscent of the shape of the human leg. It awakens sensations of elegance and luxury—calls to mind prancing thoroughbreds and pink coats. Or take the umbrella. It is an ingenious, thoroughly functional device, neat and practical. But you simply cannot imagine it in company with the racquet or the riding boot. They do not speak the same language. There seems to be something finicky about an umbrella, something rather cold and reserved—an air of dignity which the racquet utterly lacks.

We get to the point where we cannot describe our impressions of an object without treating it as a living thing with its own physiognomy. For even the most precise description, enumerating all visible characteristics, will not give an inkling of what we feel is the essence of the thing itself. Just as we do not notice the individual letters in a word but receive a total impression of the idea the word conveys, we generally are not aware of what it is that we perceive but only of the conception created in our minds when we perceive it.

Not only the tennis racquet but everything connected with the game—the court, the tennis player's clothes—arouses the same sensations. The garb is loose and comfortable, the shoes are soft—in keeping with the relaxed condition in which the player moves about the court idly picking up balls, reserving his energy for the speed and concentration which will be demanded of him the instant the ball is in play. If, later in the day, the same man appears at an official function in uniform or formal attire, not only his appearance will have changed but his entire being. His posture and gait are influenced by his clothes; restraint and dignity are now the keynote.

Turning from these examples from daily life to architecture, we find that the best buildings have been produced when the architect has been inspired by something in the problem which will give the building a distinctive stamp. Such buildings are created in a special spirit and they convey that spirit to others.

External features become a means of communicating feelings and moods from one person to another. Often, however, the only message conveyed is one of conformity. Man is less lonely when he feels that he is part of a general movement. People who get together for a common purpose try to appear as much alike as possible. If one of them finds himself a bit conspicuous, he is likely to feel miserable; the entire occasion is spoiled for him.

In pictures from a particular period people seem to look very much alike. It is not only a question of clothes and the style of hair-dress, but of posture and movement and the entire manner in which the people conduct themselves. In memoirs of the same period you find that the mode of living harmonizes with the external picture, and you will also find that the buildings, streets and towns were attuned to the rhythm of the era.

When it had passed historians discovered that a definite style had dominated the period and they gave it a name. But those who lived in that style were not aware of it. Whatever they did, however they dressed, seemed natural to them. We speak of a "Gothic" period or a "Baroque" period, and dealers in antiques and those who make their living manufacturing fake antiques are familiar with all the small details that are characteristic of each style in all its phases. *But details tell nothing essential about architecture, simply because the object of all good architecture is to create integrated wholes.*

Understanding architecture, therefore, is not the same as being able to determine the style of a building by certain external features. It is not enough to *see* architecture; you must experience it. You must observe how it was designed for a special purpose and how it was attuned to the entire concept and rhythm of a specific era. You must dwell in the rooms, feel how they close about you, observe how you are naturally led from one to the other. You must be aware of the textural effects, discover why just those colors were used, how the choice depended on the orientation of the rooms in relation to windows and the sun. Two apartments, one above the other, with rooms of exactly the same dimensions and with the same openings, can be entirely different simply because of curtains, wallpaper and furniture. You must experience the great difference acoustics make in your conception of space: the way sound acts in an enormous cathedral, with its echoes and long-toned reverberations, as compared to a small paneled room well padded with hangings, rugs and cushions.

Man's relation to implements can be broadly described thus: children begin by playing with blocks, balls and other things which they can grasp in their hands. As time goes on they demand better and better tools. At a certain stage most children have the desire to build some sort of shelter. It may be a real cave dug into a bank, or a primitive hut of rough boards. But often it is no more than a secret nook hidden among bushes, or a tent made with a rug draped over two chairs. This "cave game" can be varied in a thousand ways but common to them all is the enclosing of space for the child's own use. Many animals are also able to create a shelter for themselves, by digging a hole in the ground or building some sort of habitation above it. But the same species always does it in the same way. Man alone forms dwellings which vary according to requirements, climate and cultural pattern. The child's play is continued in the grown-up's creation, and just as man progresses from simple blocks to the most refined implements, he progresses from the cave game to more and more refined methods of enclosing space. Little by little he strives to give form to his entire surroundings.

And this—to bring order and relation into human surroundings—is the task of the architect.

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CHAPTER II

Solids and Cavities in Architecture

Seeing demands a certain activity on the part of the spectator. It is not enough passively to let a picture form itself on the retina of the eye. The retina is like a movie screen on which a continuously changing stream of pictures appears but the mind behind the eye is conscious of only very few of them. On the other hand, only a very faint visual impression is necessary for us to think that we have seen a thing; a tiny detail is enough.

A visual process can be described as follows. A man walking along with bent head receives an impression of blue jeans; a mere hint will suffice. He believes that he has seen a man though actually all he saw was the characteristic seam running down the side of the leg. From this one small observation he concludes that a man has passed him on the sidewalk, simply because where there is that sort of seam there must be jeans and where there are moving jeans there must be a man inside them. Usually his observation ends here; there are so many things to keep an eye on in a crowded street that he cannot bother his mind with his fellow pedestrians. But for some reason our man wishes to have a closer look at the person. He observes more details. He was right about the jeans but the wearer is a young girl, not a man. If he is not a very dull person he will now ask himself: "What does she look like?" He will then observe her more closely, adding detail to detail until he gets a more or less correct picture of her. His activity can be compared to that of a portrait painter. First he forms a rough sketch of his subject, a mere suggestion; then elaborates it enough for it to become a girl in jeans; finally he adds more and more details until he has obtained a characteristic portrait of that particular girl. The activity of such a spectator is creative; he *re*creates the phenomena he observes in his effort to form a complete image of what he has seen.

APPENDIX D

From Frances Yates, The Art of Memory

Chapter I

THE THREE LATIN SOURCES FOR THE CLASSICAL ART OF MEMORY[1]

AT a banquet given by a nobleman of Thessaly named Scopas, the poet Simonides of Ceos chanted a lyric poem in honour of his host but including a passage in praise of Castor and Pollux. Scopas meanly told the poet that he would only pay him half the sum agreed upon for the panegyric and that he must obtain the balance from the twin gods to whom he had devoted half the poem. A little later, a message was brought in to Simonides that two young men were waiting outside who wished to see him. He rose from the banquet and went out but could find no one. During his absence the roof of the banqueting hall fell in, crushing Scopas and all the guests to death beneath the ruins; the corpses were so mangled that the relatives who came to take them away for burial were unable to identify them. But Simonides remembered the places at which they had been sitting at the table and was therefore able to indicate to the relatives which were their dead. The invisible callers, Castor and Pollux, had handsomely paid for their share in the panegyric by drawing Simonides away from the banquet just before the crash. And this experience suggested to the poet the principles of the art of memory of which he is said to have been the inventor. Noting that it was through his memory of the places at which the guests had been sitting that he had been able to identify the bodies, he realised that orderly arrangement is essential for good memory.

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[1] The English translations of the three Latin sources used are those in the Loeb edition of the classics: the *Ad Herennium* is translated by H. Caplan; the *De oratore* by E. W. Sutton and H. Rackham; Quintilian's *Institutio oratoria* by H. E. Butler. When quoting from these translations I have sometimes modified them in the direction of literalness, particularly in repeating the actual terminology of the mnemonic rather than in using periphrases of the terms.

The best account known to me of the art of memory in antiquity is that given by H. Hajdu, *Das Mnemotechnische Schriftum des Mittelalters*, Vienna, 1936. I attempted a brief sketch of it in my article 'The Ciceronian Art of Memory' in *Medioeve e Rinascimento, Studi in onore di Bruno Nardi*, Florence, 1955, II, pp. 871 ff. On the whole, the subject has been curiously neglected.

> He inferred that persons desiring to train this faculty (of memory) must select places and form mental images of the things they wish to remember and store those images in the places, so that the order of the places will preserve the order of the things, and the images of the things will denote the things themselves, and we shall employ the places and images respectively as a wax writing-tablet and the letters written on it.[1]

The vivid story of how Simonides invented the art of memory is told by Cicero in his *De oratore* when he is discussing memory as one of the five parts of rhetoric; the story introduces a brief description of the mnemonic of *places* and *images* (*loci* and *imagines*) which was used by the Roman rhetors. Two other descriptions of the classical mnemonic, besides the one given by Cicero, have come down to us, both also in treatises on rhetoric when memory as a part of rhetoric is being discussed; one is in the anonymous *Ad C. Herennium libri IV*; the other is in Quintilian's *Institutio oratoria*.

The first basic fact which the student of the history of the classical art of memory must remember is that the art belonged to rhetoric as a technique by which the orator could improve his memory, which would enable him to deliver long speeches from memory with unfailing accuracy. And it was as a part of the art of rhetoric that the art of memory travelled down through the European tradition in which it was never forgotten, or not forgotten until comparatively modern times, that those infallible guides in all human activities, the ancients, had laid down rules and precepts for improving the memory.

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[1] Cicero, *De oratore*, II, lxxxvi, 351–4.

It is not difficult to get hold of the general principles of the mnemonic. The first step was to imprint on the memory a series of *loci* or places. The commonest, though not the only, type of mnemonic place system used was the architectural type. The clearest description of the process is that given by Quintilian.[3] In order to form a series of places in memory, he says, a building is to be remembered, as spacious and varied a one as possible, the forecourt, the living room, bedrooms, and parlours, not omitting statues and other ornaments with which the rooms are decorated. The images by which the speech is to be remembered—as an example of these Quintilian says one may use an anchor or a weapon—are then placed in imagination on the places which have been memorised in the building. This done, as soon as the memory of the facts requires to be revived, all these places are visited in turn and the various deposits demanded of their custodians. We have to think of the ancient orator as moving in imagination through his memory building *whilst* he is making his speech, drawing from the memorised places the images he has placed on them. The method ensures that the points are remembered in the right order, since the order is fixed by the sequence of places in the building. Quintilian's examples of the anchor and the weapon as images may suggest that he had in mind a speech which dealt at one point with naval matters (the anchor), at another with military operations (the weapon).

There is no doubt that this method will work for anyone who is prepared to labour seriously at these mnemonic gymnastics. I have never attempted to do so myself but I have been told of a professor who used to amuse his students at parties by asking each of them to name an object; one of them noted down all the objects in the order in which they had been named. Later in the evening the professor would cause general amazement by repeating the list of objects in the right order. He performed his little memory feat by placing the objects, as they were named, on the window sill, on the desk, on the wastepaper basket, and so on. Then, as Quintilian advises, he revisited those places in turn and demanded from them their deposits. He had never heard of the classical mnemonic but had discovered his technique quite independently. Had he extended his efforts by attaching notions to the objects remembered on the places he might have caused still greater amazement by delivering his lectures from memory, as the classical orator delivered his speeches.

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[3] *Institutio oratoria*, XI, ii, 17–22.

Whilst it is important to recognise that the classical art is based on workable mnemotechnic principles it may be misleading to dismiss it with the label 'mnemotechnics'. The classical sources seem to be describing inner techniques which depend on visual impressions of almost incredible intensity. Cicero emphasises that Simonides' invention of the art of memory rested, not only on his discovery of the importance of order for memory, but also on the discovery that the sense of sight is the strongest of all the senses.

> It has been sagaciously discerned by Simonides or else discovered by some other person, that the most complete pictures are formed in our minds of the things that have been conveyed to them and imprinted on them by the senses, but that the keenest of all our senses is the sense of sight, and that consequently perceptions received by the ears or by reflexion can be most easily retained if they are also conveyed to our minds by the mediation of the eyes.[4]

The word 'mnemotechnics' hardly conveys what the artificial memory of Cicero may have been like, as it moved among the buildings of ancient Rome, *seeing* the places, *seeing* the images stored on the places, with a piercing inner vision which immediately brought to his lips the thoughts and words of his speech. I prefer to use the expression 'art of memory' for this process.

We moderns who have no memories at all may, like the professor, employ from time to time some private mnemotechnic not of vital importance to us in our lives and professions. But in the ancient world, devoid of printing, without paper for note-taking or on which to type lectures, the trained memory was of vital importance. And the ancient memories were trained by an art which reflected the art and architecture of the ancient world, which could depend on faculties of intense visual memorisation which we have lost. The word 'mnemotechnics', though not actually wrong as a description of the classical art of memory, makes this very mysterious subject seem simpler than it is.

An unknown teacher of rhetoric in Rome[5] compiled, *circa* 86–82 B.C., a useful text-book for his students which immortalised, not his own name, but the name of the man to whom it was dedicated. It is somewhat tiresome that this work, so vitally important for the history of the classical art of memory and which will be constantly referred to in the course of this book, has no other title save the uninformative *Ad Herennium*. The busy and efficient teacher goes through the five parts of rhetoric (*inventio*, *dispositio*, *elocutio*, *memoria*, *pronuntiatio*) in a rather dry text-book style. When he comes to memory[6] as an essential part of the orator's equipment, he opens his treatment of it with the words: 'Now let us turn to the treasure-house of inventions, the custodian of all the parts of rhetoric, memory.' There are two kinds of memory, he continues, one natural, the other artificial. The natural memory is that which is engrafted in our minds, born simultaneously with thought. The artificial memory is a memory strengthened or confirmed by training. A good natural memory can be improved by this discipline and persons less well endowed can have their weak memories improved by the art.

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[4] *De oratore*, II, lxxxvii, 357.

[5] On the authorship and other problems of the *Ad Herennium*, see the excellent introduction by H. Caplan to the Loeb edition (1954).

After this curt preamble the author announces abruptly, 'Now we will speak of the artificial memory.'

An immense weight of history presses on the memory section of *Ad Herennium*. It is drawing on Greek sources of memory teaching, probably in Greek treatises on rhetoric all of which are lost. It is the only Latin treatise on the subject to be preserved, for Cicero's and Quintilian's remarks are not full treatises and assume that the reader is already familiar with the artificial memory and its terminology. It is thus really the main source, and indeed the only complete source, for the classical art of memory both in the Greek and in the Latin world. Its rôle as the transmitter of the classical art to the Middle Ages and the Renaissance is also of unique importance. The *Ad Herennium* was a well known and much used text in the Middle Ages when it had an immense prestige because it was thought to be by Cicero. It was therefore believed that the precepts for the artificial memory which it expounded had been drawn up by 'Tullius' himself.

In short, all attempts to puzzle out what the classical art of memory was like must be mainly based on the memory section of *Ad Herennium*. And all attempts such as we are making in this book to puzzle out the history of that art in the Western tradition must refer back constantly to this text as the main source of the tradition. Every *Ars memorativa* treatise, with its rules for 'places', its rules for 'images', its discussion of 'memory for things' and 'memory for words', is repeating the plan, the subject matter, and as often as not the actual words of *Ad Herennium*. And the astonishing developments of the art of memory in the sixteenth century, which it is the chief object of this book to explore, still preserve the 'Ad Herennian' outlines below all their complex accretions. Even the wildest flights of fancy in such a work as Giordano Bruno's *De umbris idearum* cannot conceal the fact that the philosopher of the Renaissance is going through yet once again the old, old business of rules for places, rules for images, memory for things, memory for words.

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[6] The section on memory is in *Ad Herennium*, III, xvi–xxiv.

Evidently, therefore, it is incumbent upon us to attempt the by no means easy task of trying to understand the memory section of *Ad Herennium*. What makes the task by no means easy is that the rhetoric teacher is not addressing us; he is not setting out to explain to people who know nothing about it what the artificial memory was. He is addressing his rhetoric students as they congregated around him *circa* 86–82 B.C., and *they* knew what he was talking about; for *them* he needed only to rattle off the 'rules' which they would know how to apply. We are in a different case and are often somewhat baffled by the strangeness of some of the memory rules.

In what follows I attempt to give the content of the memory section of *Ad Herennium*, emulating the brisk style of the author, but with pauses for reflection about what he is telling us.

The artificial memory is established from places and images (*Constat igitur artificiosa memoria ex locis et imaginibus*), the stock definition to be forever repeated down the ages. A *locus* is a place easily grasped by the memory, such as a house, an intercolumnar space, a corner, an arch, or the like. Images are forms, marks or simulacra (*formae, notae, simulacra*) of what we wish to remember. For instance if we wish to recall the genus of a horse, of a lion, of an eagle, we must place their images on definite *loci*.

The art of memory is like an inner writing. Those who know the letters of the alphabet can write down what is dictated to them and read out what they have written. Likewise those who have learned mnemonics can set in places what they have heard and deliver it from memory. 'For the places are very much like wax tablets or papyrus, the images like the letters, the arrangement and disposition of the images like the script, and the delivery is like the reading.'

If we wish to remember much material we must equip ourselves with a large number of places. It is essential that the places should form a series and must be remembered in their order, so that we can start from any *locus* in the series and move either backwards or forwards from it. If we should see a number of our acquaintances standing in a row, it would not make any difference to us whether we should tell their names beginning with the person standing at the head of the line or at the foot or in the middle. So with memory *loci*. 'If these have been arranged in order, the result will be that, reminded by the images, we can repeat orally what we have committed to the *loci*, proceeding in either direction from any *locus* we please.'

The formation of the *loci* is of the greatest importance, for the same set of *loci* can be used again and again for remembering different material. The images which we have placed on them for remembering one set of things fade and are effaced when we make no further use of them. But the *loci* remain in the memory and can be used again by placing another set of images for another set of material. The *loci* are like the wax tablets which remain when what is written on them has been effaced and are ready to be written on again.

In order to make sure that we do not err in remembering the order of the *loci* it is useful to give each fifth *locus* some distinguishing mark. We may for example mark the fifth *locus* with a golden hand, and place in the tenth the image of some acquaintance whose name is Decimus. We can then go on to station other marks on each succeeding fifth *locus*.

It is better to form one's memory *loci* in a deserted and solitary place for crowds of passing people tend to weaken the impressions. Therefore the student intent on acquiring a sharp and well-defined set of *loci* will choose an unfrequented building in which to memorise places.

Memory *loci* should not be too much like one another, for instance too many intercolumnar spaces are not good, for their resemblance to one another will be confusing. They should be of moderate size, not too large for this renders the images placed on them vague, and not too small for then an arrangement of images will be overcrowded. They must not be too brightly lighted for then the images placed on them will glitter and dazzle; nor must they be too dark or the shadows will obscure the images. The intervals between the *loci* should be of moderate extent, perhaps about thirty feet, 'for like the external eye, so the inner eye of thought is less powerful when you have moved the object of sight too near or too far away'.

A person with a relatively large experience can easily equip himself with as many suitable *loci* as he pleases, and even a person who thinks that he does not possess enough sufficiently good *loci* can remedy this. 'For thought can embrace any region whatsoever and in it and at will construct the setting of some locus.' (That is to say, mnemonics can use what were afterwards called 'fictitious places', in contrast to the 'real places' of the ordinary method.)

Pausing for reflection at the end of rules for places I would say that what strikes me most about them is the astonishing visual precision which they imply. In a classically trained memory the space between the *loci* can be measured, the lighting of the *loci* is allowed for. And the rules summon up a vision of a forgotten social habit. Who is that man moving slowly in the lonely building, stopping at intervals with an intent face? He is a rhetoric student forming a set of memory *loci*.

'Enough has been said of places', continues the author of *Ad Herennium*, 'now we turn to the theory of images.' Rules for images now begin, the first of which is that there are two kinds of images, one for 'things' (*res*), the other for 'words' (*verba*). That is to say 'memory for things' makes images to remind of an argument, a notion, or a 'thing'; but 'memory for words' has to find images to remind of every single word.

I interrrupt the concise author here for a moment in order to remind the reader that for the rhetoric student 'things' and 'words' would have an absolutely precise meaning in relation to the five parts of the rhetoric. Those five parts are defined by Cicero as follows:

> Invention is the excogitation of true things (*res*), or things similar to truth to render one's cause plausible; disposition is the arrangement in order of the things thus discovered; elocution is the accomodation of suitable words to the invented (things); memory

> is the firm perception in the soul of things and words; pronunciation is the moderating of the voice and body to suit the dignity of the things and words.[7]

'Things' are thus the subject matter of the speech; 'words' are the language in which that subject matter is clothed. Are you aiming at an artificial memory to remind you only of the order of the notions, arguments, 'things' of your speech? Or do you aim at memorising every single word in it in the right order? The first kind of artificial memory is *memoria rerum*; the second kind is *memoria verborum*. The ideal, as defined by Cicero in the above passage, would be to have a 'firm perception in the soul' of both things and words. But 'memory for words' is much harder than 'memory for things'; the weaker brethren among the author of *Ad Herennium*'s rhetoric students evidently rather jibbed at memorising an image for every single word, and even Cicero himself, as we shall see later, allowed that 'memory for things' was enough.

To return to the rules for images. We have already been given the rules for places, what kind of places to choose for memorising. What are the rules about what kind of images to choose for memorising on the places? We now come to one of the most curious and surprising passages in the treatise, namely the psychological reasons which the author gives for the choice of mnemonic images. Why is it, he asks, that some images are so strong and sharp and so suitable for awakening memory, whilst others are so weak and feeble that they hardly stimulate memory at all? We must enquire into this so as to know which images to avoid and which to seek.

> Now nature herself teaches us what we should do. When we see in every day life things that are petty, ordinary, and banal, we generally fail to remember them, because the mind is not being stirred by anything novel or marvellous. But if we see or hear something exceptionally base, dishonourable, unusual, great, unbelievable, or ridiculous, that we are likely to remember for a long time. Accordingly, things immediate to our eye or ear we commonly forget; incidents of our childhood we often remember best. Nor could this be so for any other reason than that ordinary things easily slip from the memory while the striking and the novel stay longer in the mind. A sunrise, the sun's course, a sunset are

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[7] *De inventione*, I, vii, 9 (translation based on that by H. M. Hubbell in the Loeb edition, but made more literal in reproducing the technical terms *res* and *verba*).

> marvellous to no one because they occur daily. But solar eclipses are a source of wonder because they occur seldom, and indeed are more marvellous than lunar eclipses, because these are more frequent. Thus nature shows that she is not aroused by the common ordinary event, but is moved by a new or striking occurrence. Let art, then, imitate nature, find what she desires, and follow as she directs. For in invention nature is never last, education never first; rather the beginnings of things arise from natural talent, and the ends are reached by discipline.
>
> We ought, then, to set up images of a kind that can adhere longest in memory. And we shall do so if we establish similitudes as striking as possible; if we set up images that are not many or vague but active (*imagines agentes*); if we assign to them exceptional beauty or singular ugliness; if we ornament some of them, as with crowns or purple cloaks, so that the similitude may be more distinct to us; or if we somehow disfigure them, as by introducing one stained with blood or soiled with mud or smeared with red paint, so that its form is more striking, or by assigning certain comic effects to our images, for that, too, will ensure our remembering them more readily. The things we easily remember when they are real we likewise remember without difficulty when they are figments. But this will be essential—again and again to run over rapidly in the mind all the original places in order to refresh the images.[8]

Our author has clearly got hold of the idea of helping memory by arousing emotional affects through these striking and unusual images, beautiful or hideous, comic or obscene. And it is clear that he is thinking of human images, of human figures wearing crowns or purple cloaks, bloodstained or smeared with paint, of human figures dramatically engaged in some activity—doing something. We feel that we have moved into an extraordinary world as we run over his places with the rhetoric student, imagining on the places such very peculiar images. Quintilian's anchor and weapon as memory images, though much less exciting, are easier to understand than the weirdly populated memory to which the author of *Ad Herennium* introduces us.

It is one of the many difficulties which confront the student of the history of the art of memory that an *Ars memorativa* treatise, though it will always give the rules, rarely gives any concrete application of the rules, that is to say it rarely sets out a system of mnemonic images on their places. This tradition was started by the author of *Ad Herennium* himself who says that the duty of an instructor in mnemonics is to teach the method of making images, give a few examples, and then encourage the student to form his own. When teaching 'introductions', he says, one does not draft a thousand set introductions and give them to the student to learn by heart; one teaches him the method and then leaves him to his own inventiveness. So also one should do in teaching mnemonic images.[9] This is an admirable tutorial principle though one regrets that it prevents the author from showing us a whole set or gallery of striking and unusual *imagines agentes*. We must be content with the three specimens which he describes.

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[8] *Ad Herennium*, III, xxii.

The first is an example of a 'memory for things' image. We have to suppose that we are the counsel for the defence in a law suit. 'The prosecutor has said that the defendant killed a man by poison, has charged that the motive of the crime was to gain an inheritance, and declared that there are many witnesses and accessories to this act.' We are forming a memory system about the whole case and we shall wish to put in our first memory *locus* an image to remind us of the accusation against our client. This is the image.

> We shall imagine the man in question as lying ill in bed, if we know him personally. If we do not know him, we shall yet take some one to be our invalid, but not a man of the lowest class, so that he may come to mind at once. And we shall place the defendant at the bedside, holding in his right hand a cup, in his left, tablets, and on the fourth finger, a ram's testicles. In this way we can have in memory the man who was poisoned, the witnesses, and the inheritance.[10]

The cup would remind of the poisoning, the tablets, of the will or the inheritance, and the testicles of the ram through verbal similarity with *testes*—of the witnesses. The sick man is to be like the man himself, or like someone else whom we know (though not one of the anonymous lower classes). In the following *loci* we

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[9] *Ibid.*, III, xxiii, 39.

[10] *Ibid.*, III, xx, 33. On the translation of *medico testiculos arietinos tenentem* as 'on the fourth finger a ram's testicles', see the translator's note, Loeb edition, p. 214. The *digitus medicinalis* was the fourth finger of the left hand. Mediaeval readers, unable to understand *medico*, introduced a doctor into the scene; see below, p. 65

APPENDIX E

1

Demolition

The intact facade's now almost black
in the rain; all day they've torn at the back
of the building, "the oldest concrete structure
in New England," the newspaper said. By afternoon,
when the backhoe claw appears above
three stories of columns and cornices,

the crowd beneath their massed umbrellas cheer.
Suddenly the stairs seem to climb down themselves,
atomized plaster billowing: dust of 1907's
rooming house, this year's bake shop and florist's,
the ghosts of their signs faint above the windows
lined, last week, with loaves and blooms.

We love disasters that have nothing to do
with us: the metal scoop seems shy, tentative,
a Japanese monster tilting its yellow head
and considering what to topple next. It's a weekday,
and those of us with the leisure to watch
are out of work, unemployable or academics,

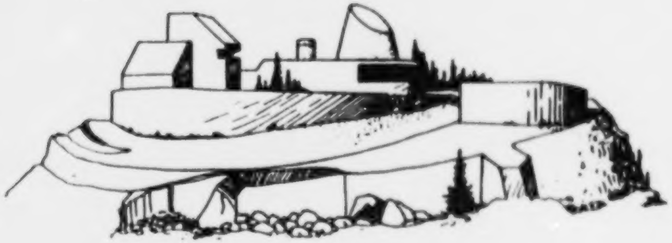
joined by a thirst for watching something fall.
All summer, at loose ends, I've read biographies,
Wilde and Robert Lowell, and fallen asleep
over a fallen hero lurching down a Paris boulevard,
talking his way to dinner or a drink,
unable to forget the vain and stupid boy

LEVEL / ACTIVITY

3/14

CONCEPT

An architectural structure relates to its environment. It can either harmonize with its surroundings or it can stand apart.



LESSON

What is an **environment?** Environment deals with many things: natural topography (land formations and contour), local fauna and flora, surrounding building themes, climate, land use (park, industrial, etc.). An architect should never ignore the important environmental considerations in planning a structure.

PRODUCTIVE THINKING

Divergent (Verbal): 1. How many environments can you think of? (Mountains, plains, cities, seacoast, industrial, park, etc.)

2. What type of building would be appropriate in each of those settings? The unity a building achieves within its environment depends on how well the structure "fits in" with its environment. For example, there would be little unity between a log cabin and a setting in New York City's Manhattan section, or a 110-story skyscraper in Yellowstone National Park.

Analogy: Create an **analogy** like the ones below.

Log cabins are to New York City as skyscrapers are to Yellowstone National Park. (Inappropriate)

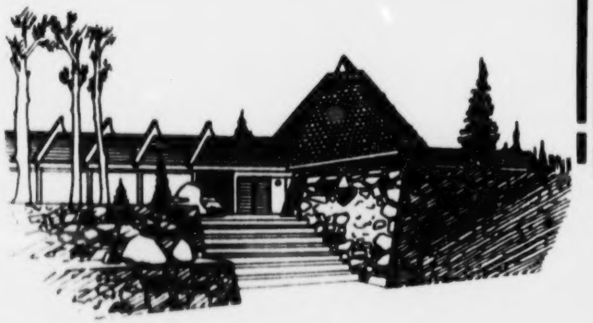
Tree frogs are to hot deserts as horned toads are to the rain forests.

Igloos are to the equator as grass huts are to the North Pole.

Violins are to a rock band as electric guitars are to a symphony orchestra.

What are the ways structures may conflict with their environment? (Building materials, functional design, climate, topography, existing themes, landscape.)

Considering architecture in relationship to its environment can create **unity**—a condition of harmony where design corresponds with function and fits with its surroundings. *(See fig. 14.1.)* Buildings which express unity possess a cooperative spirit. They fit.



14.1.

A sample analogy of things that fit might be:

Adobe is to a pueblo dwelling as paper is to a wasp nest. (The analysis is that both are functional, both use native materials, and both have colors which merge them with nature.)

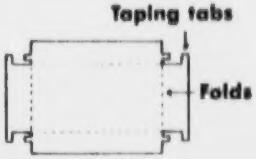
SUGGESTED ACTIVITIES

Divergent (Verbal): Draw as many harmonious housing structures from nature as you can.

Design a structure to fit into an environment for real and imaginary animals or people. (Consider materials, structure, function, climate, socialization.)

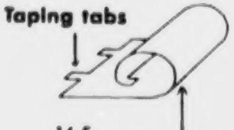
Convergent: Build several models with boxes made of foam core or construction board. A variety of forms will be needed. *(See figs. 14.2 through 14.7.)*

14.2.

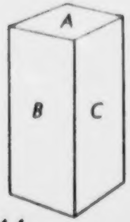


14.3.

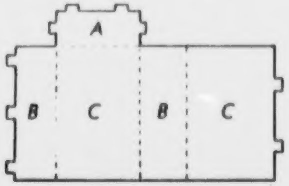
14.4. Cylinders



14.5. Single faced corregated board



14.6.



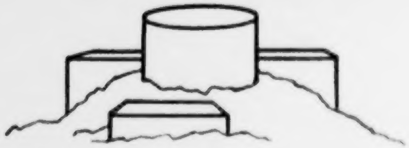
14.7.

Divergent: After the models are constructed, place them in an "environment," such as a sandbox, and "berm" some to demonstrate the unifying effect of topography *(fig. 14.8)*. (Berm means to pile up or build up earth around a form. It is used with great effect in solar housing.)

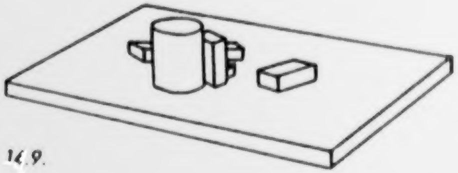
"Jam" some together to show dis-unity as an environment *(fig. 14.9)*.

Analyze your community for harmonious and disharmonious relationships. Look especially at styles and themes, materials, colors, textures, and functions.

Finally, arrange a pleasant, harmonious setting. Use dried weeds and hills to landscape.



14.8.



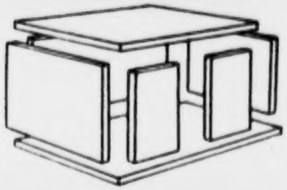
14.9.

LEVEL / ACTIVITY

3/15

CONCEPT

Walls, ceilings, floors, and other flat surfaces are called planes.



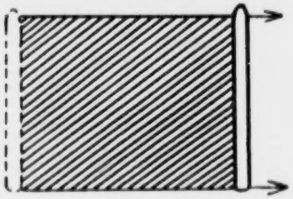
LESSON

A piece of chalk can draw a line. If we "drag" that line, it marks a **plane** *(fig. 15.1)*.

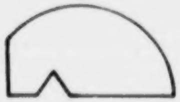
If you pull down a blind, it makes a plane.

Shape is a plane's **Identity.** Planes may be named or identified as circular, triangular, or rectangular, or **combinations** of those shapes *(fig. 15.2)*.

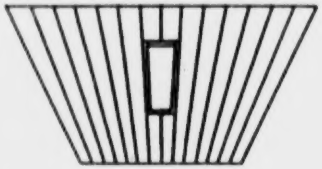
Architects use planes to plan buildings and houses. The **overhead plane** may be the roof or ceiling. The **wall planes** are the walls in our homes *(fig. 15.3)*. (Doors and windows are part of the wall planes.)



15.1.
Plane



15.2.

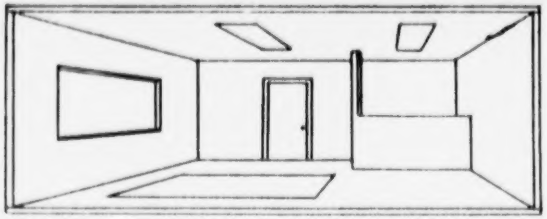


15.3.

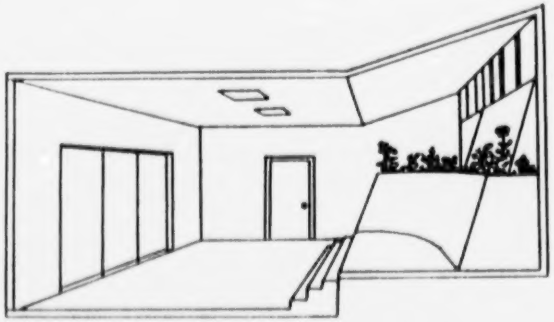
LESSON 48

The **base planes** are the ground or floor *(fig. 15.4)*.

Any of the planes may be sloped, raised, lowered, or changed in some way to make them interesting *(fig. 15.5)*.



15.4.



15.5.

PRODUCTIVE THINKING

Analogy: Plane is to form (volume) as line is to shape. (Boundary and descriptive relationship.)

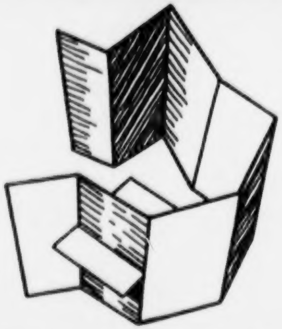
Planes are used to enclose **volume** (form) as **lines** are often used to outline **shape.** (They are boundary determiners.)

Because architecture is a visual art dealing in three-dimensional volumes of form and space, planes are extremely important.

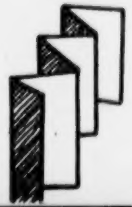
The visual properties of the planes determine the qualities of the volume and space they enclose. Planes may be folded, twisted, and penetrated *(fig. 15.6)*.

Try this analogy:

A folded plane is to a hallway as rhythm is to ________ (pattern, movement, etc.) *(fig. 15.7)*.



15.6.
Folded plane with penetrating plane.



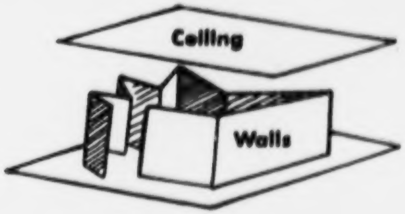
Place a ground plane on your table. (You may use cardboard for such planes.) Using four sheets of stiff paper, create some interesting wall planes. (If folded, the planes will stand up.)

Put a ceiling plane on top of your walls, creating a room *(fig. 15.8)*.

Could you make windows or doors in your wall planes? (Yes, with scissors, or by folding so that openings are left.) (See Lesson 4/25—International Style and the New Brutalism— for architects' application of this concept.)

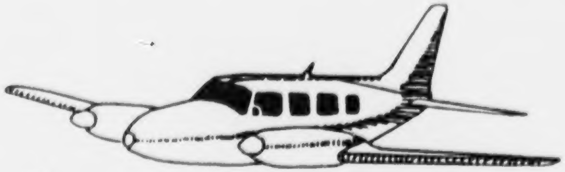
What are the relationships and differences between airplanes *(fig. 15.9)*, building planes *(fig. 15.6)*, and the plains *(fig. 15.11)*)?

Consider ceiling planes as sky, clouds, canopies, roofs, etc.



15.8.

Wall planes in the models are more rigid if stiff paper or cardboard is used, and if tabs are used to glue them to the ground at the bases.



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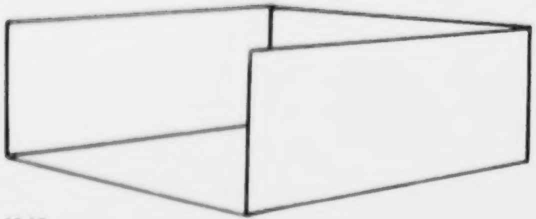
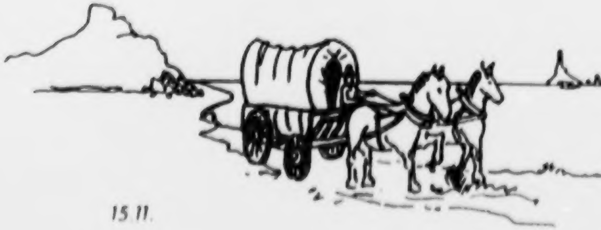


15.10.



15.11.

LEVEL / ACTIVITY

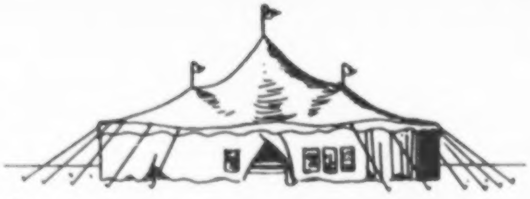
3/16

CONCEPT

The function of a building influences its form.

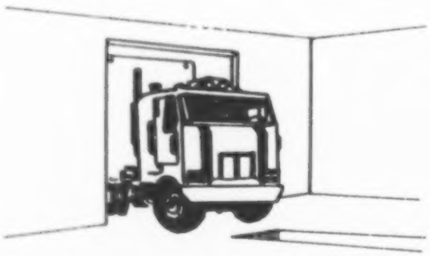
LESSON

The circus tent is one of the best traditional examples of architectural form and function *(fig. 16.1)*. The circus had unusual functional needs. It had to arrive in town, stay a few days, then pack up and be on its way again. It needed to keep the rain and sun off large groups of people who came to see the circus. The tent could be put up quickly and taken down and transported just as easily. It was high enough for the trapeze artists; it was large and colorful, and it could be packed up and put into trucks or railroad cars for moving.



16.1.

If a large truck needs to pull into a garage to have its motor repaired, the size of the truck determines part of the building's function *(fig. 16.2)*. The form needs to be tall enough for a large truck and have a door large enough for a truck to drive through. It may require a pit for workers to be able to get underneath the truck easily. It will need excellent ventilation with air fans, openings, and outlets. All of these requirements will affect the look of the building, just as the needs of the circus require a large, colorful tent.



16.2.

Louis Sullivan was a great architect who lived in Chicago in the 1800s. He taught Frank Lloyd Wright as a young architect. He said, "Form follows function." Some buildings meet their function, but their form may remain ugly and unresponsive.

How many examples of function problems can you think of? For example, a pencil sharpener without a basket to catch shavings *(fig. 16.3)*, a wastebasket without a bottom on it, a toothbrush with no bristles, a house with no roof.

Do you remember the story of "The Three Bears"? Some of the things Goldilocks found were not very functional, but others were "just right." Can you remember which things were just right? Those are the functional things for her size and her needs.

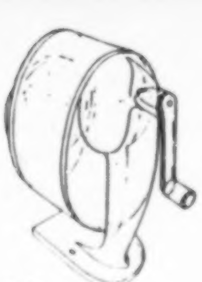
Sometimes the materials an object is made with influence how it looks. Would iron pillows be very nice to sleep on? They would last a long time and not wear out. Would wooden windows be very functional? Why not?

How has the **form** of the teacher's chair been influenced by its **function** *(fig. 16.4)*? How has this plane's form been influenced by its function *(fig. 16.5)*?

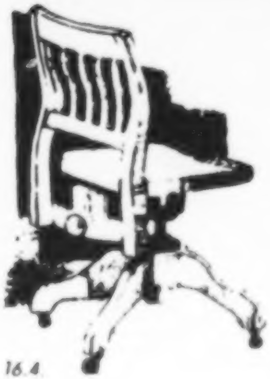
How has this building's form been affected by its function *(fig. 16.6)*? (World's largest building for world's largest retailer; offices, power, etc.) Is it beautiful? It was a unique designer's idea to use a "bundle" of rectangular tubes as a structure. They strengthen each other.

How has the building in *figure 16.7* been influenced by its function?

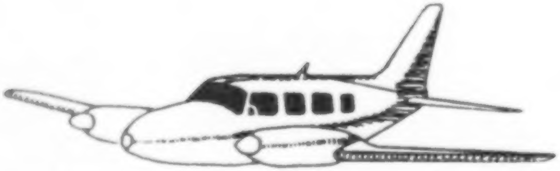
The flying buttresses of a Gothic cathedral look decorative, but they are functional parts that help control the outward thrust of the ceiling vaults.



16.3.



16.4.



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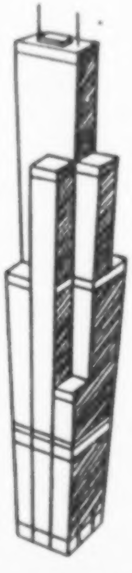
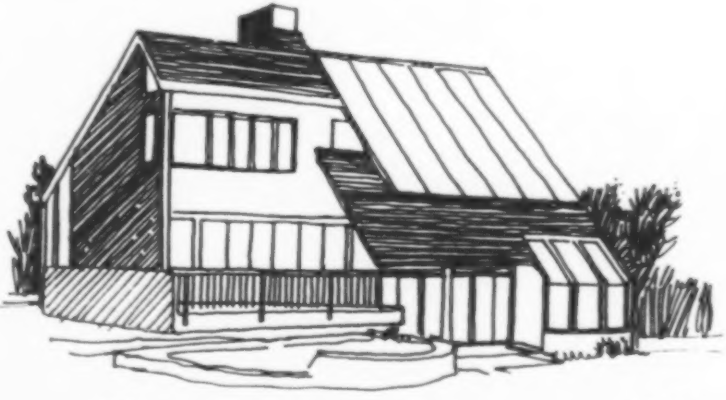


16.6.
Sears Tower, Chicago; Skidmore, Owings, and Merrill, c. 1973.



16.7.

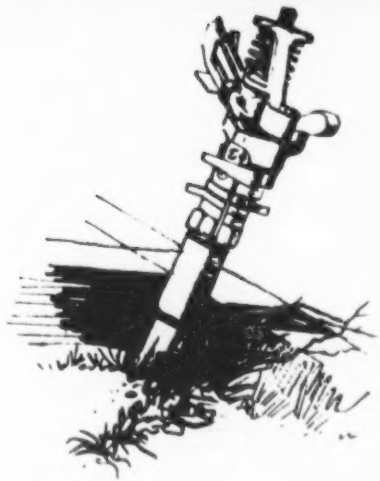
If you can complete these **analogies** logically, you understand the concept.

1. Function is to form as fire/heat is to _______. (Chimney, firebrick, etc.)
2. How it *looks* and how you *use* it are the same as its _______. (Form)
3. Form is to function as _______ is to lawn sprinkler *(fig. 16.8)*. (Hose, pipe, spout)
4. Form is to function as _______ is to _______.

Make up some new analogies.

Divergent: Design a house which has a nice relationship of function and form. It should "work" and should "look like" its work. *(See fig. 16.9 for an example).*

Redesign something you use every day, but ignore how you use it. Do not worry about relating its form or its function to the design.



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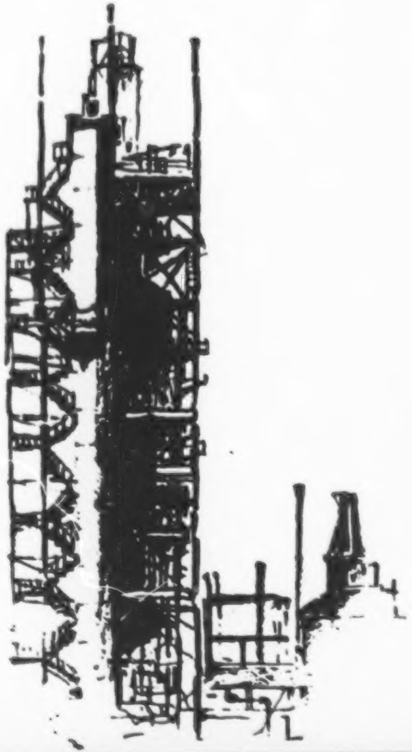
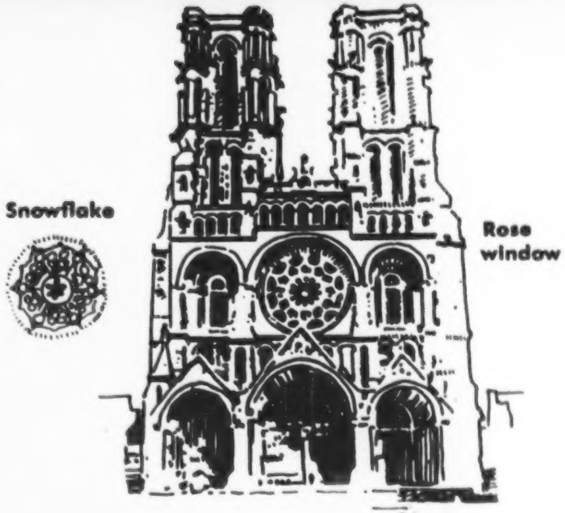


LEVEL / ACTIVITY

3/17

CONCEPT

Nature is a model for architectural forms and shapes which are variations of the cone, cube, cylinder, sphere, and pyramid. Nature is also a model for architectural forms which are not so geometric (Euclidean).

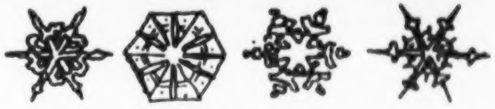


LESSON

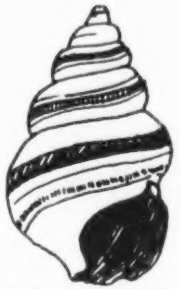
When we speak of nature, we mean the things which are part of the world which humans have not made. We mean such things as the sun and sky, the leaves, seashells, crystals, and rocks.

By learning to look closely at small things, and at a distance from large things, we get ideas for shapes, color, texture, and form. If a snowflake should fall on your sleeve you could look at it with a magnifying glass. If it were a flat flake, you would see that each flake is **different,** yet all are **alike** in many ways *(fig. 17.1)*. For example, they appear "starlike" and have six points. They are symmetrical—the same around the center—and are hexagonal in shape. Yet, with such similarities, each is very different. They bear a striking resemblance to rose windows in Gothic cathedrals.

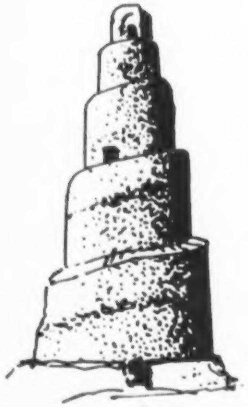
Look how similar the seashell *(fig. 17.2)* is to the spiral ziggurat Thanksgiving Square Chapel in Dallas, Texas *(figs. 17.3 through 17.5)*. The chapel was designed by Philip Johnson and John Burgee.



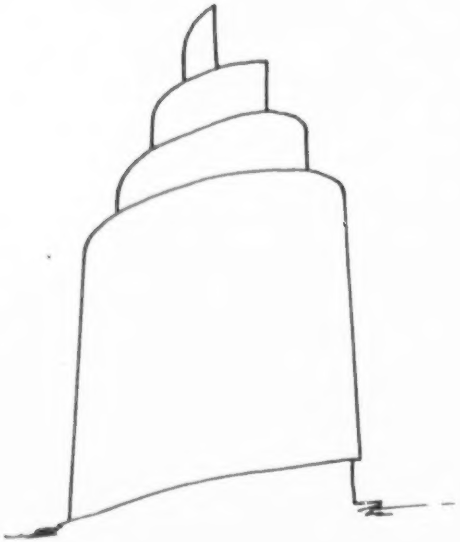
17.1.



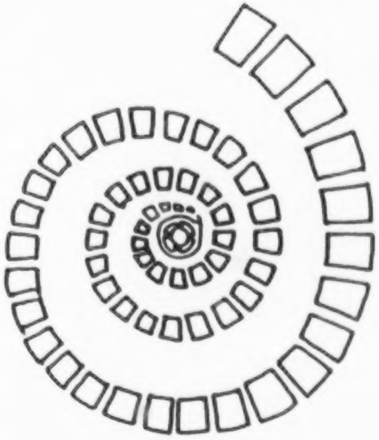
17.2.



17.3.
Spiral minaret of Great Mosque of Samarra, Iraq, A.D. 848-852.



17.4.
Thanksgiving Square Chapel, Dallas; Philip Johnson and John Burgee, 1977.



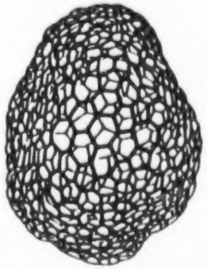
17.5.
Thanksgiving Square Chapel Interior, looking up.

Buckminster Fuller used such natural ideas. He designed a structure called the **geodesic dome.** Here are some pictures of alveoli cells *(fig. 17.6)*. Notice how similar they are to Fuller's dome *(fig. 17.7)*. He had to arrange his basic shapes to connect easily and form a rounded surface, even though he used only straight building materials.

Look how similar the seashell *(fig. 17.8)* is to the minaret *(fig. 17.9)*.

The Opera House in Sydney, Australia *(fig. 17.10)*, sports some similar shell shapes *(fig. 17.11)* in its roof structure.

Alveoli in the human lung look like some structures built by ants and humans *(figs. 17.12 and 17.13)*.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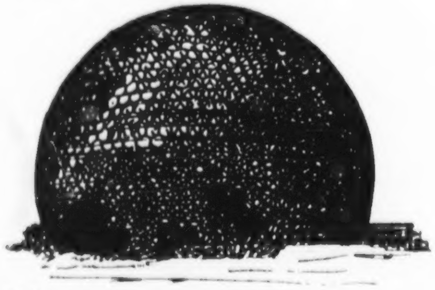
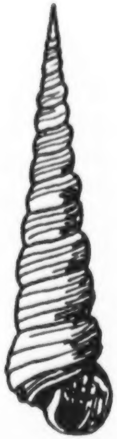

17.7.
U.S. Pavilion, Montreal; Buckminster Fuller, 1967.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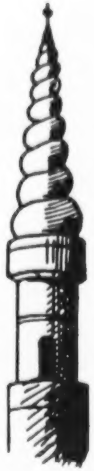
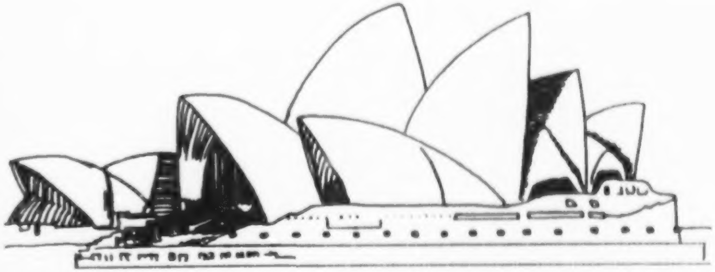
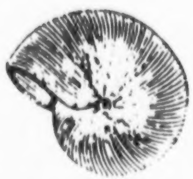
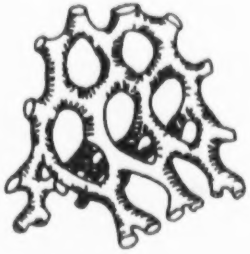
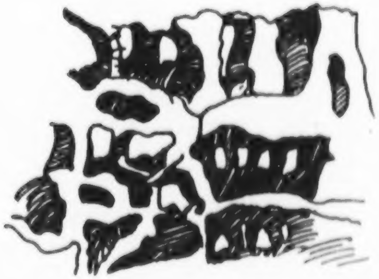

17.9.


17.10
Sydney Opera House, Australia; Jorn Utzon, 1959-1973.


17.11


17.12.
Lungs.


17.13.
Red ant structure.

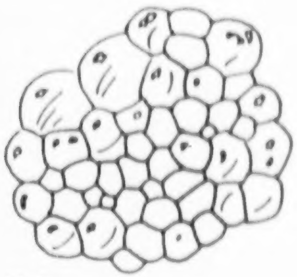
This market place in Royan, France *(fig. 17.14)*, by André Morisseau, looks surprisingly like some large white shells found in the ocean *(fig. 17.15)*.

Because **rock** is such an important part of nature, buildings using stone as a construction material often seem more natural or **organic.** *Figure 17.16* is a simple pioneer rock house. Even though it is still basically a box, the stone surface harmonizes with the trees, ivy, and environment.

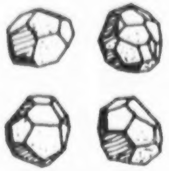
Figure 17.17 shows some natural forms which could be used for ideas in planning buildings. These are soap bubble cells. Have you ever filled your tub with bubble bath and watched how each bubble is shaped by the pressure of bubbles next to it? While the cells look very much alike, they are all different. No two appear to be the same.

Many forms in nature are based on crystals *(fig. 17.18)*. Even though geometric (regular shape, straight lines), they are very different from one another. *Figure 17.19* is a synagogue in Israel.

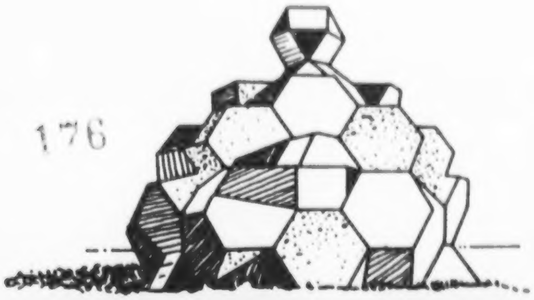
Because of convenience, it is a tendency of architectural designers to work with "boxes," that is, with things easily drawn with straight edges, right triangles, T-squares, and compasses *(fig. 17.20)*. As a result, many "natural forms" alternatives are ignored or rejected as too bothersome. For example, it is easy to design the building in *figure 17.21* using straight edges and rulers.

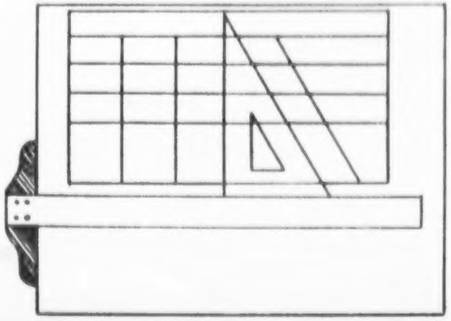


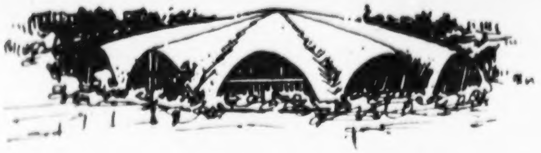
17.17.



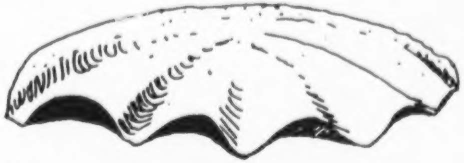
17.18.



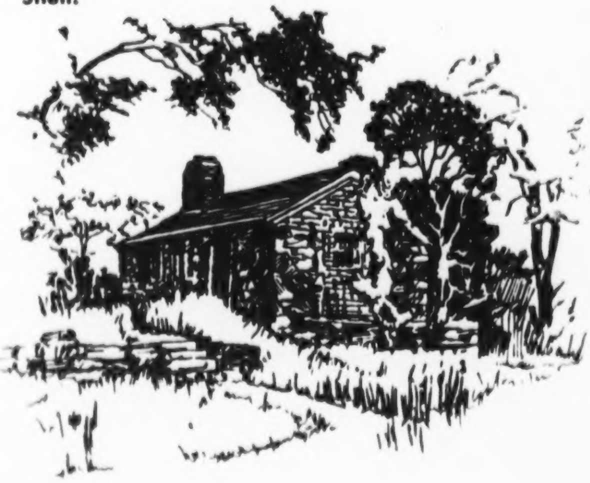




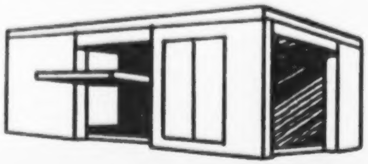
17.14.
Market place, Royan, France; André Morisseau, c. 1950.



17.15.
Shell.

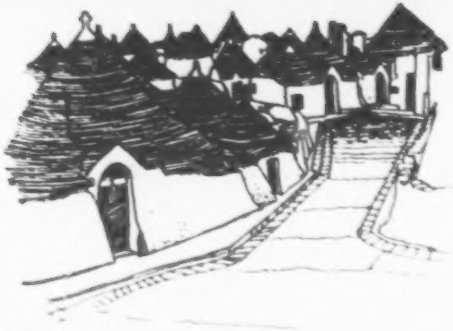


17.16.



But buildings like those in *figure 17.22* require a whole new set of skills, tools, and attitudes. These homes are more natural—softer, less harsh forms. Though similar, they enjoy unlimited variation.

Sometimes the only way we can get our buildings to satisfy our need to be part of **nature** is with **landscape architecture.** We plant flowers, grass, bushes, and trees or ivy to make us feel more welcome, or attracted to the otherwise harsh design.



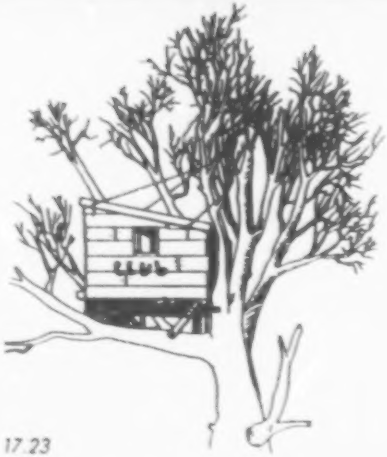
17.22.
Rural community, Trulli, near Cisternino, Italy.

PRODUCTIVE THINKING

Name 20 things found in nature. What kinds of things are *not* found in nature?

Can you think of some things in nature that give you an idea for a house or a building? What are they?

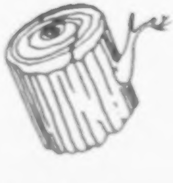
What are all of the ways a tree house is **natural?** *(Fig. 17.23)* (It is wood, in a tree, kind of haphazardly built, etc.) **Unnatural?**



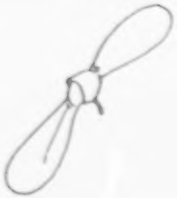
17.23

SUGGESTED ACTIVITIES

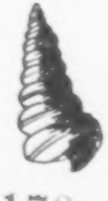
Find some forms in nature—walking home, around your house, on a visit to the mountains or the beach, in biology books—which you think would be interesting ideas for buildings. *(See figs. 17.24 through 17.26.)*



17.24.
Wood



17.25.
Seed pods

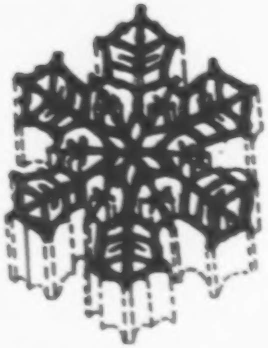


17.26.
Shell

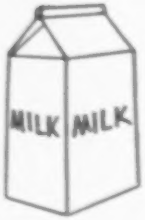
Cut snowflakes *(fig. 17.27)*, then use them as special windows in a building you draw, or trace them and make them **dimensional** by adding a few lines.

Find pictures in magazines of buildings which look like they were inspired by natural things.

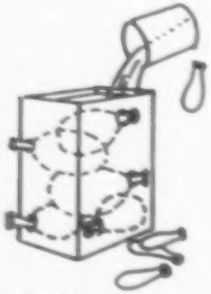
Fill a milk carton with partially inflated balloons. Then fill the carton with plaster *(figs. 17.28 and 17.29)*. Let it set, then pop the balloons and peel away the carton. A **natural** form will be made. (You can carve and "improve" the form with a knife or a rasp.)



17.27.



17.28.



17.29.

APPENDIX F

her the resurrection of the ordinary. Soon the skunk cabbage would come up, and the cidery smell would rise in the orchard, and the girls would wash and starch and iron their cotton dresses. And every evening would bring its familiar strangeness, and crickets would sing the whole night long, under her windows and in every part of the black wilderness that stretched away from Fingerbone on every side. And she would feel that sharp loneliness she had felt every long evening since she was a child. It was the kind of loneliness that made clocks seem slow and loud and made voices sound like voices across water. Old women she had known, first her grandmother and then her mother, rocked on their porches in the evenings and sang sad songs, and did not wish to be spoken to.

And now, to comfort herself, my grandmother would not reflect on the unkindness of her children, or of children in general. She had noticed many times, always, that her girls' faces were soft and serious and inward and still when she looked at them, just as they had been when they were small children, just as they were now when they were sleeping. If a friend was in the room her daughters would watch his face or her face intently and tease or soothe or banter, and any one of them could gauge and respond to the finest changes of expression or tone, even Sylvie, if she chose to. But it did not occur to them to suit their words and manners to her looks, and she did not want them to. In fact, she was often prompted or restrained by the thought of saving this unconsciousness of theirs. She was then a magisterial woman, not only because of her height and her large, sharp face, not only because of her upbringing, but also because it suited her purpose, to be what she seemed to be so that her children would never be startled or surprised, and to take on all the postures and vestments of matron, to differentiate her life from theirs, so that her children would never feel intruded upon. Her love for them was utter and equal, her government of them generous and absolute. She was constant as daylight, and she would be unremarked as daylight, just to watch the calm inwardness of their faces. What was it like. One evening one summer she went out to the garden. The earth in the rows was light and soft as cinders, pale clay yellow, and the trees and plants were ripe, ordinary green and full of comfortable rustlings. And above the pale earth and bright trees the sky was the dark blue of ashes. As she knelt in the rows she heard the hollyhocks thump against the shed wall. She felt the hair lifted from her neck by a swift, watery wind, and she saw the trees fill with wind and heard their trunks creak like masts. She burrowed her hand under a potato plant and felt gingerly for the new potatoes in their dry net of roots, smooth as eggs. She put them in her apron and walked back to the house thinking, What have I seen, what have I seen. The earth and the sky and the garden, not as they always are. And she saw her daughters' faces not as they always were, or as other people's were, and she was quiet and aloof and watchful, not to startle the strangeness away. She had never taught them to be kind to her.

A total of seven and a half years passed between Helen's leaving Fingerbone and her returning, and when she did finally return it was on a Sunday morning, when

Marilynne Robinson

One day my grandmother must have carried out a basket of sheets to hang in the spring sunlight, wearing her widow's black, performing the rituals of the ordinary as an act of faith. Say there were two or three inches of hard old snow on the ground, with earth here and there oozing through the broken places, and that there was warmth in the sunlight, when the wind did not blow it all away, and say she stooped breathlessly in her corset to lift up a sodden sheet by its hems, and say that when she had pinned three corners to the lines it began to billow and leap in her hands, to flutter and tremble, and to glare with the light, and that the throes of the thing were as gleeful and strong as if a spirit were dancing in its cerements. That wind! she would say, because it pushed the skirts of her coat against her legs and made strands of her hair fly. It came down the lake, and it smelled sweetly of snow, and rankly of melting snow, and it called to mind the small, scarce, stemmy flowers that she and Edmund would walk half a day to pick, though in another day they would all be wilted. Sometimes Edmund would carry buckets and a trowel, and lift them earth and all, and bring them home to plant, and they would die. They were rare things, and grew out of ants' nests and bear dung and the flesh of perished animals. She and Edmund would climb until they were wet with sweat. Horseflies followed them, and the wind chilled them. Where the snow receded, they might see the ruins of a porcupine, teeth here, tail there. The wind would be sour with stale snow and death and pine pitch and wildflowers.

In a month those flowers would bloom. In a month all dormant life and arrested decay would begin again.

In a month she would not mourn, because in that season it had never seemed to her that they were married, she and the silent Methodist Edmund who wore a necktie and suspenders even to hunt wildflowers, and who remembered just where they grew from year to year, and who dipped his handkerchief in a puddle to wrap the stems, and who put out his elbow to help her over the steep and stony places, with a wordless and impersonal courtesy she did not resent because she had never really wished to feel married to anyone. She sometimes imagined a rather dark man with crude stripes painted on his face and sunken belly, and a hide fastened around his loins, and bones dangling from his ears, and clay and claws and fangs and bones and feathers and sinews and hide ornamenting his arms and waist and throat and ankles, his whole body a boast that he was more alarming than all the death whose trophies he wore. Edmund was like that, a little. The rising of the spring stirred a serious, mystical excitement in him, and made him forgetful of her. He would pick up eggshells, a bird's wing, a jawbone, the ashy fragment of a wasp's nest. He would peer at each of them with the most absolute attention, and then put them in his pockets, where he kept his jackknife and his loose change. He would peer at them as if he could read them, and pocket them as if he could own them. This is death in my hand, this is ruin in my breast pocket, where I keep my reading glasses. At such times he was as forgetful of her as he was of his suspenders and his Methodism, but all the same it was then that she loved him best, as a soul all unaccompanied, like her own.

So the wind that billowed her sheets announced to she knew her mother would not be at home, and she stayed only long enough to settle Lucille and me on the bench in the screened porch, with a box of graham crackers to prevent conflict and restlessness.

Perhaps from a sense of delicacy my grandmother never asked us anything about our life with our mother. Perhaps she was not curious. Perhaps she was so affronted by Helen's secretive behavior that even now she refused to take notice of it. Perhaps she did not wish to learn by indirection what Helen did not wish to tell her.

If she had asked me, I could have told her that we lived in two rooms at the top of a tall gray building, so that all the windows—there were five altogether, and a door with five rows of small panes—overlooked a narrow white porch, the highest flight of a great scaffolding of white steps and porches, fixed and intricate as the frozen eke of water from the side of a cliff, grainy gray-white like dried salt. From this porch we looked down on broad tarpaper roofs, eave to eave, spread like somber tents over hoards of goods crated up, and over tomatoes and turnips and chickens, and over crabs and salmons, and over a dance floor with a jukebox where someone began playing "Sparrow in the Treetop" and "Good Night, Irene" before breakfast. But of all this, from our vantage, we saw only the tented top. Gulls sat in rows on our porch railing and peered for scavenge.

Since all the windows were in a line, our rooms were as light as the day was, near the door, and became darker as one went farther in. In the back wall of the main room was a door which opened into a carpeted hallway, and which was never opened. It was blocked, in fact, by a big green couch so weighty and shapeless that it looked as if it had been hoisted out of forty feet of water. Two putty-colored armchairs were drawn up in a conversational circle. Halves of two ceramic mallards were in full flight up the wall. As for the rest of the room, it contained a round card table covered with a plaid oilcloth, a refrigerator, a pale-blue china cupboard, a small table with a hotplate on it, and a sink with an oilcloth skirt. Helen put lengths of clothesline through our belts and fastened them to the doorknob, an arrangement that nerved us to look over the side of the porch, even when the wind was strong.

Bernice, who lived below us, was our only visitor. She had lavender lips and orange hair, and arched eyebrows each drawn in a single brown line, a contest between practice and palsy which sometimes ended at her ear. She was an old woman, but she managed to look like a young woman with a ravaging disease. She stood any number of hours in our doorway, her long back arched and her arms folded on her spherical belly, telling scandalous stories in a voice hushed in deference to the fact that Lucille and I should not be hearing them. Through all these tales her eyes were wide with amazement recalled, and now and then she would laugh and prod my mother's arm with her lavender claws. Helen leaned in the doorway, smiled at the floor, and twined her hair.

Bernice loved us. She had no other family, except her husband, Charley, who sat on her porch with his hands on his knees and his belly in his lap, his flesh mottled like sausage, thick veins pulsing in his temples and in the backs of his hands. He conserved syllables as if to conserve breath. Whenever we went down the stairs he would lean slowly after us and say "Hey!" Bernice liked to bring us custard, which had a thick yellow skin and sat in a copious liquid the consistency of eyewater. Helen was selling cosmetics in a drugstore, and Bernice looked after us while she was at work, though Bernice herself worked all night as a cashier in a truck stop. She looked after us by trying to sleep lightly enough to be awakened by the first sounds of fist fights, of the destruction of furniture, of the throes of household poisoning. This scheme worked, though sometimes Bernice would wake in the grip of some nameless alarm, run up the stairs in her nightgown and eyebrowless, and drub our windows with her hands, when we were sitting quietly at supper with our mother. These disruptions of her sleep were not less resented because they were self-generated. But she loved us for our mother's sake.

Bernice took a week off from work so that she could lend us her car for a visit to Fingerbone. When she learned from Helen that her mother was living, she began to urge her to go home for a while, and Helen, to her great satisfaction, was finally persuaded. It proved to be a fateful journey. Helen took us through the mountains and across the desert and into the mountains again, and at last to the lake and over the bridge into town, left at the light onto Sycamore Street and straight for six blocks. She put our suitcases in the screened porch, which was populated by a cat and a matronly washing machine, and told us to wait quietly. Then she went back to the car and drove north almost to Tyler, where she sailed in Bernice's Ford from the top of a cliff named Whiskey Rock into the blackest depth of the lake.

not judgmental
[illegible]

They searched for her. Word was sent out a hundred miles in every direction to watch for a young woman in a car which I said was blue and Lucille said was green. Some boys who had been fishing and knew nothing about the search had come across her sitting cross-legged on the roof of the car, which had bogged down in the meadow between the road and the cliff. They said she was gazing at the lake and eating wild strawberries, which were prodigiously large and abundant that year. She asked them very pleasantly to help her push her car out of the mud, and they went so far as to put their blankets and coats under the wheels to facilitate her rescue. When they got the Ford back to the road she thanked them, gave them her purse, rolled down the rear windows, started the car, turned the wheel as far to the right as it would go, and roared swerving and sliding across the meadow until she sailed off the edge of the cliff.

My grandmother spent a number of days in her bedroom. She had an armchair and a footstool from the parlor placed by the window that looked into the orchard, and she sat there, food was brought to her there. She was not inclined to move. She could hear, if not the particular words and conversations, at least the voices of people in the kitchen, the gentle and formal society of friends and mourners that had established itself in her house to look after things. Her friends were very old, and fond of white cake and pinochle. In twos and threes they would volunteer to look after us, while the others played cards at the breakfast table. We would be walked around by nervous, peremptory old men who would again, clearly pleased that it had made an impression. "Yes, you look very nice, my dear. Very well," Nona said, rather loudly. She really intended this observation for her sister, just as Lily's compliment had been intended for her. They shouted, for the sake of the other's comprehension and because neither of them could gauge her voice very well, and each of them considered her sister's hearing worse than her own, so each of them spoke a little louder than she had to. And they had lived all their lives together, and felt that they had a special language between them. So when Lily said, with a glance at Nona, "What a lovely dress," it was as if to say, "She seems rather sane! She seems rather normal!" And when Nona said, "You look very well," it was as if to say, "Perhaps she'll do! Perhaps she can stay and we can go!" Sylvie sat in the simple kitchen light with her hands in her lap and her eyes on her hands, while Lily and Nona stalked about on their stiff old legs, poaching eggs and dishing up stewed prunes, flushed and elated by their secret understanding.

"Did you know Mr. Simmons died?" Lily asked.

"He must have been very old," Sylvie said.

"And do you remember a Danny Rappaport?"

Sylvie shook her head.

"He was a class behind you in school."

"I guess I should remember him."

"Well, he died. I don't know how."

Nona said, "The funeral was announced in the paper, but there was no article about it. We thought that was strange. Just a photograph."

"Not recent, either," Lily grumbled. "He looked nineteen. Not a line in his face."

"Was Mother's funeral nice?" Sylvie asked.

"Lovely."

"Oh, yes, very nice."

The old sisters looked at each other.

"Very small, though, of course," Nona said.

"Yes, she wanted it small. But you should have seen the flowers! The whole house was full. We sent half of them over to the church."

"She didn't want flowers," Nona said. "She would have called it a waste."

"She didn't want a service."

"I see."

There was a silence. Nona buttered a piece of toast and slid the jelled egg onto it and broke it up with a fork as if it were for a child. Sylvie took a chair at the table and ate with her head on her hand. Nona went upstairs, and in a few minutes came down again, carrying a hot-water bottle. "I've put you in the hall bedroom. It's a little close, but that's better than a draft. There are two heavy blankets on the bed, and one lighter one, and I put a comforter on the chair." She filled the hot-water bottle with water from the kettle and bundled it in tea towels. Lucille and I each took a suitcase and followed Sylvie upstairs.

The stairs were wide and polished, with a heavy railing and spindle banisters, dating as they did from a time when my grandfather was growing confident enough of his carpentry to use good materials and to build things that might be considered permanent. But they terminated rather oddly in a hatch or trapdoor, because at the top of the stairs one came face to face with a wall so essential to supporting the roof (which had always sagged somewhat in the middle) that my grandfather could not bring himself to cut another door in it. So instead he had worked out a device with pulleys and window weights that made the trapdoor (which was left over from the time when the second floor was merely a loft with a ladder up to it) rise at the slightest push and then fall shut again of its own accord with a little slam. (This device prevented drafts from sweeping down the polished steps in torrents, flooding the parlor, eddying into the kitchen.) Sylvie's bedroom was really a sort of narrow dormer with a curtain closing it off from the hallway. There was a cot in it, fattened with pillows and blankets, and a little lamp, which Nona had left burning on a shelf. There was a single round window, small and high as a fully risen moon. The dresser and chair were outside the curtain, one on each side. Sylvie, in the half-dark hallway, turned and kissed each of us. "I'll get you presents," she whispered. "Tomorrow, maybe." She kissed us again and went behind the curtain, into the narrow room.

I have often wondered what it seemed like to Sylvie to come back to that house, which would have changed since she left it, shifted and settled. I imagine her with her grips in her bare hands, walking down the middle of the road, which was narrowed by the banks of plowed snow on either side, and narrowed more by the slushy pools that were forming at the foot of each bank. Sylvie always walked with her head down, to one side, with an abstracted and considering expression, as if someone were speaking to her in a soft voice. But she would have glanced up sometimes at the snow, which was the color of heavy clouds, and the sky, which was the color of melting snow, and all the slick black planks and sticks and stumps that erupted as the snow sank away.

How must it have seemed to step into the narrow hallway which still kept (as it seemed to me) a trace of the rude odor that the funeral flowers had begun to make before Nona could bring herself to throw them away. Her hands and feet must have ached from the warmth. I remember how red and twisted her hands looked, lying in the lap of her green dress, and how she pressed her arms to her sides. I remember that, as she sat there in a wooden chair in the white kitchen, smoothing her borrowed-looking dress and working her feet out of her loafers, sustaining all our stares with the placid modesty of a virgin who has conceived, her happiness was palpable.

The day after Sylvie arrived, Lucille and I woke up early. It was our custom to prowl the dawn of any significant day. Ordinarily the house would belong to us for an hour or more, but that morning we found Sylvie sitting in the kitchen by the stove, with her coat on, eating oyster crackers from a small cellophane bag. She blinked at us, smiling. "It was nice with the light off," she suggested, and Lucille and I collided in our haste to pull the chain. Sylvie's coat made us think she might be leaving, and we were ready to perform great feats of docility to keep her. "Isn't that nicer?" In fact, the wind was badgering the house, throwing frozen rain against the windows. We sat down on the rug by her feet and watched her. She handed us each an oyster cracker. "I can hardly believe I'm here," she said finally. "I was on the desire to build some sort of shelter. It may be a real cave dug into a bank, or a primitive hut of rough boards. But often it is no more than a secret nook hidden among bushes, or a tent made with a rug draped over two chairs. This "cave game" can be varied in a thousand ways but common to them all is the enclosing of space for the child's own use. Many animals are also able to create a shelter for themselves, by digging a hole in the ground or building some sort of habitation above it. But the same species always does it in the same way. Man alone forms dwellings which vary according to requirements, climate and cultural pattern. The child's play is continued in the grown-up's creation, and just as man progresses from simple blocks to the most refined implements, he progresses from the cave game to more and more refined methods of enclosing space. Little by little he strives to give form to his entire surroundings.

And this—to bring order and relation into human surroundings—is the task of the architect.

CHAPTER II

Solids and Cavities in Architecture

Seeing demands a certain activity on the part of the spectator. It is not enough passively to let a picture form itself on the retina of the eye. The retina is like a movie screen on which a continuously changing stream of pictures appears but the mind behind the eye is conscious of only very few of them. On the other hand, only a very faint visual impression is necessary for us to think that we have seen a thing; a tiny detail is enough.

A visual process can be described as follows. A man walking along with bent head receives an impression of blue jeans; a mere hint will suffice. He believes that he has seen a man though actually all he saw was the characteristic seam running down the side of the leg. From this one small observation he concludes that a man has passed him on the sidewalk, simply because where there is that sort of seam there must be jeans and where there are moving jeans there must be a man inside them. Usually his observation ends here; there are so many things to keep an eye on in a crowded street that he cannot bother his mind with his fellow pedestrians. But for some reason our man wishes to have a closer look at the person. He observes more details. He was right about the jeans but the wearer is a young girl, not a man. If he is not a very dull person he will now ask himself: "What does she look like?" He will then observe her more closely, adding detail to detail until he gets a more or less correct picture of her. His activity can be compared to that of a portrait painter. First he forms a rough sketch of his subject, a mere suggestion; then elaborates it enough for it to become a girl in jeans; finally he adds more and more details until he has obtained a characteristic portrait of that particular girl. The activity of such a spectator is creative; he *re*creates the phenomena he observes in his effort to form a complete image of what he has seen.

This act of re-creation is common to all observers; it is the activity that is necessary in order to experience the thing seen. But *what* they see, what they re-create when observing the same object, can vary enormously. There is no objectively correct idea of a thing's appearance, only an infinite number of subjective impressions of it. This is true of works of art as of everything else; it is impossible to say, for instance, that such and such a conception of a painting is the true one. Whether it makes an impression on the observer, and what impression it makes, depends not only on the work of art but to a great extent on the observer's susceptibility, his mentality, his education, his entire environment. It also depends on the mood he is in at the moment. The same painting can affect us very differently at different times. Therefore it is always exciting to return to a work of art we have seen before to find out whether we still react to it in the same way.

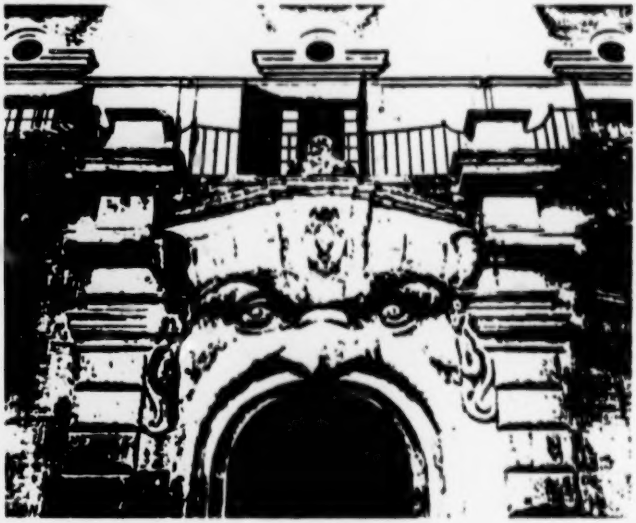
Usually it is easier to perceive a thing when we know something about it beforehand. We see what is familiar and disregard the rest. That is to say we re-create the observed into something intimate and comprehensible. This act of re-creation is often carried out by our identifying ourselves with the object by imagining ourselves in its stead. In such instances our activity is more like that of an actor getting the feel of a role than of an artist creating a *picture* of something he observes outside himself. When we look at a portrait of someone laughing or smiling we become cheerful ourselves. If, on the other hand, the face is tragic, we feel sad. People looking at pictures have a remarkable ability to enter a role which seems very foreign to them. A weak little man swells with heroism and a zest for life when he sees a Hercules performing daring deeds. Commercial artists and producers of comic strips are aware of this tendency and make use of it in their work. Men's clothes sell more readily when they are displayed on athletic figures. The observer identifies himself with the handsomely built model and believes he will resemble him simply by donning the same apparel. A middle-aged woman uncritically buys the costume she sees in an advertisement on a shapely glamour girl. The boy with glowing cheeks who sits spell-bound over the adventures in a comic strip imagines himself in Tarzan's or Superman's stead.

It is a well known fact that primitive people endow inanimate objects with life. Streams and trees, they believe, are nature spirits that live in communion with them. But even civilized people more or less consciously treat lifeless things as though they were imbued with life.

In classical architecture, for example, we speak of supporting and supported members. Many people, it is true, associate nothing particular with this. But others receive the impression of a heavy burden weighing down the column, just as it would a human being. This is very literally illustrated where the supporting element has been given human form, such as a Caryatid or an Atlas—a petrified giant straining all his muscles under his load. This same conception is expressed in Greek columns by a slight outward curvature of profile, the "entasis," which gives an impression of straining muscles—a surprising thing to find in a rigid and unresponsive pillar of stone.

The various parts of a chair are given the same designations that are applied to human and animal members—legs, arms, seat and back. And often the legs are actually shaped like animal parts, such as lion paws, eagle claws, and doe, goat, ram, or horse hooves. Such surrealistic forms have appeared periodically ever since ancient times. Besides these, there are many examples of "organic" forms which neither resemble nor represent anything found in nature. They were employed in the German Jugend style around the turn of the century and appeared again not only in a later furniture style but also in other design. An automobile, for instance, is called a "Jaguar" and in keeping with the idea association its lines recall the speed and brute force of its namesake.

Even things which in no way suggest organic forms are often invested with human characteristics. We have already seen how riding boots and umbrellas can affect us as real personalities (p. 31). In Dickens' novels, buildings and interiors acquire souls in some demoniacal way corresponding to the souls of the inhabitants. Hans Andersen, who gave a ball and a top the power of speech, used to cut out silhouettes in which a windmill became a human being, just as it was to Don Quixote.



Portal of Palazzetto Zuccari, Roma

Portals are often described as "gaping," and the architect of the Palazetto Zuccari in Rome actually formed an entrance of that building as the gaping jaws of a giant.

The Danish architect Ivar Bentsen, who throughout his life retained a remarkably original view of architecture, said at the dedication of a new wing of a folk high school in Denmark: "We usually say that a house *lies*, but some houses *stand*—towers always stand. This house here *sits* with its back against a hill, gazing towards the south. Go outdoors in any direction and observe it and you will see how the schoolhouse lifts up its head and peers out over the broad countryside south of the town."

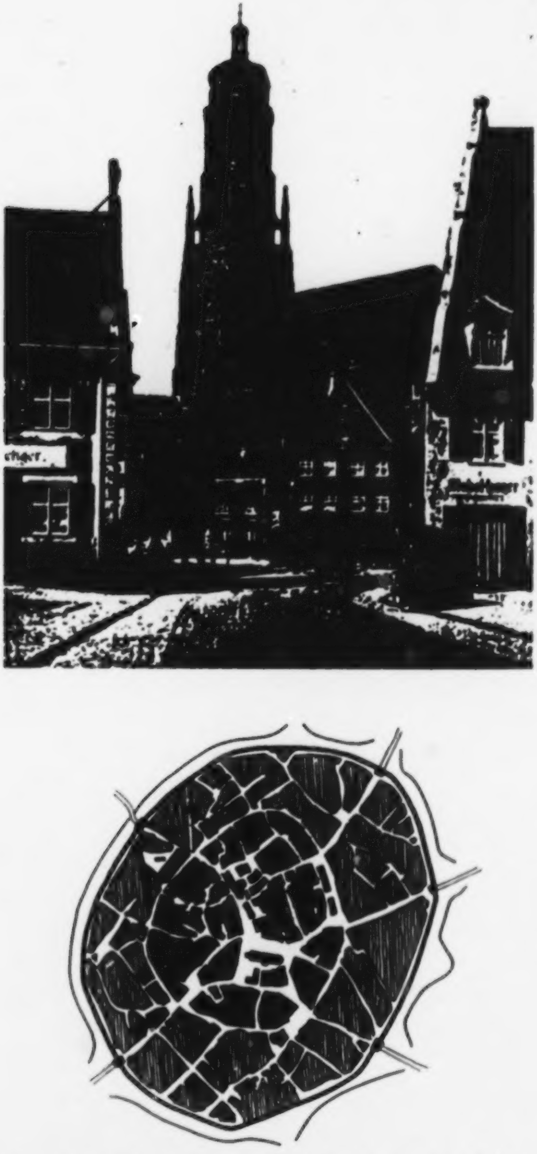
Such animation of a building makes it easier to experience its architecture as a whole rather than as the addition of many separate technological details. To Dickens a street of houses was a drama, a meeting of original characters, each house speaking with a voice of its own. But some streets are so dominated by a conspicuous geometric pattern that even a Dickens cannot give life to them. There exists from his hand a description of the view from the Lion Inn in the old town of Shrewsbury in England: "From the windows I can look all downhill and slantwise at the crookedest black-and-white houses, all of many shapes except straight shapes," he wrote. Anyone who has visited one of the towns in Shropshire with their tarred half-timber Tudor houses will remember the strong impression made by the broad black lines on white ground and will understand that here even Dickens must see shapes and not strange personalities.

But how do we experience a street when we perceive the houses as geometric forms? The German art-historian A. E. Brinckmann has given an elucidating analysis of a picture of a certain street in the little German town of Nördlingen.

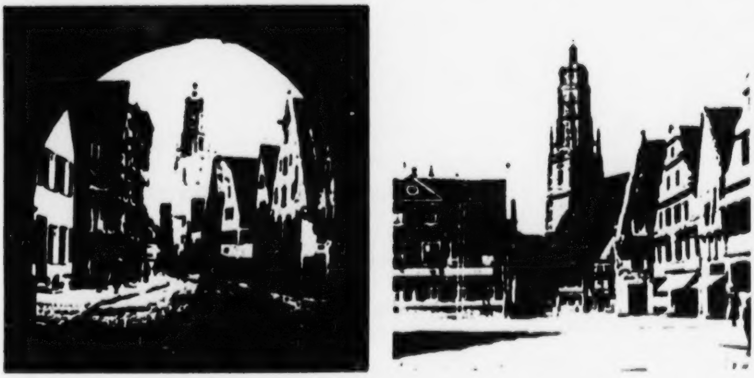
"The beauty of the situation at Schäfflersmarkt in Nördlingen is due entirely to the fine relations of its forms. How then are the proportions of the two-dimensional picture converted into proportions in three dimensions, into a conception of depth? The windows are of almost identical size which gives the same scale to all the houses and makes the three-storied in the background outgrow the two-storied in the foreground. All roofs show approximately the same pitch and complete uniformity of material. The ever-diminishing network of the tiles helps the eye to apprehend the distances and thereby also the real size of the roofs. The eye passes from smaller to larger roofs until it finally rests on the all-dominating one of the Church of St. George. Nothing indeed creates a more vivid illusion of space than the constant repetition of dimensions familiar to the eye and seen in different depths of the architectural perspective. These are the realities of the architectural composition and their effect is enhanced by the difference in tones caused by the atmosphere. When finally the complete forms of the houses are realized—the two-bayed and the four-bayed, all with horizontal divisions—the tower seems overwhelming in size with its concisely articulated masses rising high into the air."

By keeping an eye on the picture while reading Brinckmann's description it is possible to experience the whole thing exactly as he describes it. But when you see the place in reality you get a very different impression of it. Instead of a street *picture* you get an impression of a whole town and its atmosphere. Nördlingen is a medieval town surrounded by a circular wall. Your first glimpse of it, after passing through the town gate, gives you the conception of a town consisting of identical houses with pointed gables facing the street and dominated by a huge church. And as you penetrate further into the town your first impression is confirmed. Nowhere do you stop and say: "It should be seen from here." The question that interested Brinckmann, how a two-dimensional picture can best give the impression of three dimensions, does not arise. You are now in the middle of the picture itself. This means that you not only see the houses directly in front of you but at the same time, and without actually seeing them, you are aware of those on either side and remember the ones you have already passed. Anyone who has first seen a place in a picture and then visited it knows how different reality is. You sense the atmosphere all around you and are no longer dependent on the angle from which the picture was made. You breathe the air of the place, hear its sounds, notice how they are re-echoed by the unseen houses behind you.

There *are* streets and plazas and parks which were deliberately laid out to be seen from a particular spot. It might be a portal or a terrace. The size and position of everything seen from there were carefully determined to give the best impression of depth, of an interesting vista. This is particularly true of Baroque layouts which so often converge at one point. An interesting example of this, and one of the sights of Rome, is the celebrated "view through the keyhole." On Mount Aventine, above the Tiber, the peaceful Via di Santa Sabina leads you past ancient monasteries



Schäfflersmarkt with St. George's Church, Nördlingen, from Brinckmann
Below, plan of Nördlingen. Scale 1:15000

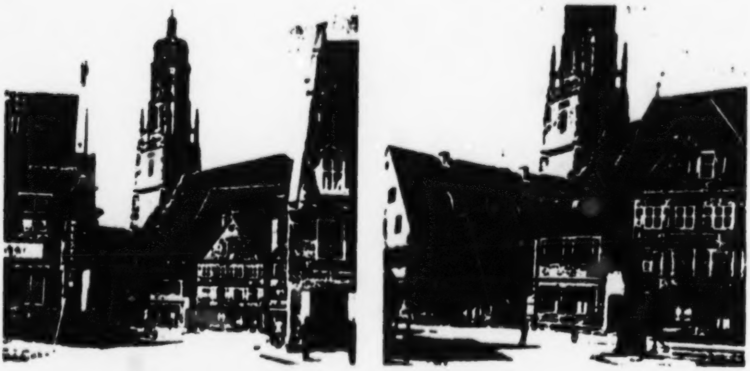


Views of Nördlingen from the city gate to Schäfflersmarkt
There is no particular spot from which to experience the street

and churches to a small piazza embellished with obelisks and trophies in stucco. Above a brown door to the right are the arms of the Knights of Malta. But the door is closed and barred. Through the keyhole alone you can get a view of the sequestered precincts. And what a view it is! At the end of the deep perspective of a long garden walk you see the distant dome of S. Peter's swelling against the sky.

Here you have all the advantages of a deliberately planned view because you see reality as through a telescope, from a fixed point—and nothing interferes to distract your attention. The view has only one direction and what is behind the observer plays no part in it.

But this is a rare exception. Ordinarily we do not see a *picture* of a thing but receive an impression of the thing itself, of the entire form including the sides we cannot see, and of all the space surrounding it. Just as in the example of the girl in jeans, the impression received is only a general one—usually we do not see any details. Rarely can a person who has "seen" a building give a detailed description of it. If, for example, a tourist visiting Nördlingen suddenly saw the church, he would immediately realize it was a church. We regard a church as a distinct type,



Church of St. George, Nördlingen, seen from Schäfflersmarkt
The impression of the buildings is formed from a series of observations

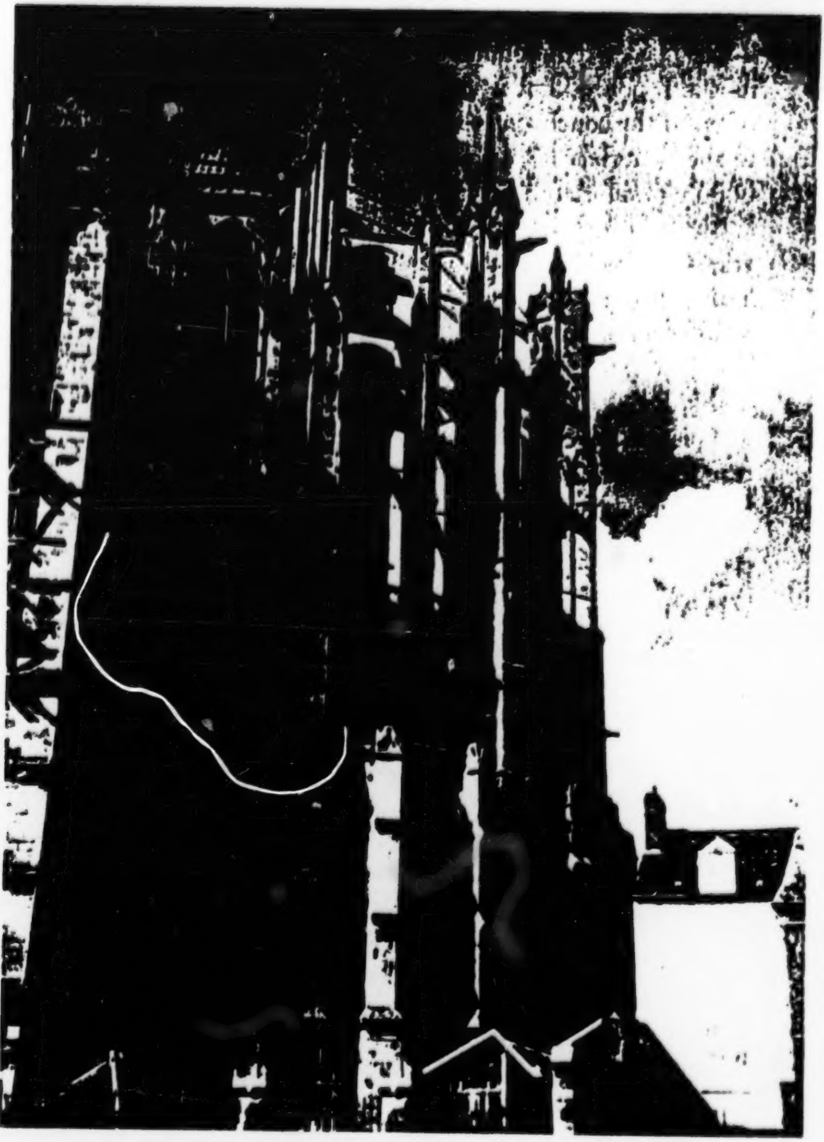
a symbol as easily recognized as a letter of the alphabet. If we see the letter L we recognize it without knowing what sort of L it is, whether bold-face or lean-face, whether grotesque or Antiqua or any other type. Simply seeing the vertical and horizontal strokes together tells us that it is an L.

In the same way we know that we have seen a church when we have merely received an impression of a tall building combined with a steeple. And if we are not interested in knowing more we usually notice no more. But if we are interested we go further. First we attempt to verify the original impression. Is it really a church? Yes, it must be; the roof is very high and steep and at the front there is a tower like a block standing on end. As we observe the tower it seems to grow. We discover that it is higher than most towers, which means that we must alter our first impression of it. During the visual process we seem to place the octagonal tiers on top of the rectangular block—originally we had not noticed that they were octagonal. In our imagination we see them rising out of the square tower like sections of a telescope until the work of re-creation—which the entire visual process is—ends at the topmost tier where it is checked and terminated by the little rounded calotte. No, it is not finished at that. To complete the picture it is necessary to let the crowning lantern rise out of the skull-cap and add the small flying buttresses and pinnacles at the corners of the square tower.

The mental process that goes on in the mind of a person who observes a building in this way is very much like that which goes on in the mind of an architect when planning a building. After having roughly decided on the main forms he continues by adding details which shoot out from the body like buds and thorns. If he has had manual training in one of the building trades he knows how the individual parts are produced. He mentally prepares the materials and combines them in one large structure. It gives him pleasure to work with the different materials, to see them change from an amorphous mass of ordinary stone and wood into a definite entity, the result of his own efforts.

About 45 miles north of Paris lies the town of Beauvais with its great cathedral. Actually it is only the chancel of a cathedral that was never completed but its dimensions are so enormous that it can be seen for miles, towering above the four-storied houses of the town. The foundations were laid in 1247 and the vaulting was finished in 1272. It was one of those heavenward-aspiring Gothic structures with pillars like tall, slim trees which seem to grow right into the sky. They were about 144 feet high. The construction proved too daring, however, and the vaulting collapsed in 1294. The church was rebuilt about forty years later with the vault just as fantastically high as before but supported now from the outside by flying buttresses. And the builders were apparently so fascinated by this purely structural problem that they made a virtue of necessity and turned the supporting members into a rich composition of piers and arches embellished with sculpture. In other words, purely structural features were treated æsthetically, each one given almost sculptural form.

The architect can become so interested in forming all the structural parts of a building that he loses sight of the fact that construction is, after all, only a means and not an end in itself. The elaborate exterior of Beauvais Cathedral was developed to



Beauvais Cathedral

make possible the fantastically high nave—not from any desire to create a spiked monument striving to pierce the heavens with its sharp points. But it is understandable that the architect can come to the conclusion that the aim of his calling is to give form to the materials he works with. According to his conception, building material is the medium of architecture.

But, you may ask, can there be any other? And the answer is yes; it is possible to have quite a different conception. Instead of letting his imagination work with structural forms, with the *solids* of a building, the architect can work with the empty space—the cavity—between the solids, and consider the forming of that space as the real meaning of architecture.

This can be illustrated by an example. Ordinarily a building is made by assembling the materials on the site and with them erecting a structure which encloses the space of the building. In the case of Beauvais the problem was to raise a church on a flat tract of land. But let us suppose the site to be an enormous, solid rock and the problem to hollow out rooms inside it. Then the architect's job would be to form space by eliminating material—in this case by removing some of the rock. The material itself would not be given form though some of it would be left standing after most had been taken away.

In the first instance it is the stone mass of the cathedral which is the reality; in the second the cavities within the mass.

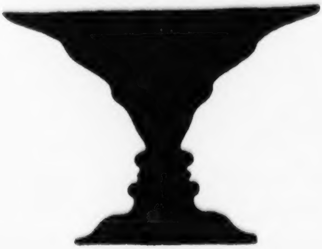
This can also be illustrated by a two-dimensional example which may make it clearer.

If you paint a black vase on a white ground, you consider all the black as "figure" and all the white as that which it really is—as background which lies behind the figure and stretches out on both sides with no definite form. If we try to fix the figure in our minds we will note that at the bottom the foot spreads out on both sides and above it a number of convexities also project on to the white ground.

But if we consider the white as figure and the black as ground—for example, a hole in the figure opening into a black space—

then we see something quite different. Gone is the vase and in its stead are two faces in profile. Now the white becomes the convexities projecting out onto the black ground and forming nose, lips and chin.

We can shift our perception at will from one to the other, alternately seeing vase and profiles. But each time there must be an absolute change in perception. We cannot see both vase and profiles at the same time.



The strange thing is that we do not conceive the two figures as complementing each other. If you try to draw them you will involuntarily exaggerate the size of the area which at the moment appears as convexities. Ordinarily convex forms are seen as figure, concave as ground. This can be seen on the figure above. The outline here being a wavy line it is possible to see either black or white convexities, as you choose. But other figures, such as one with a scalloped edge, are not perceptually ambiguous.

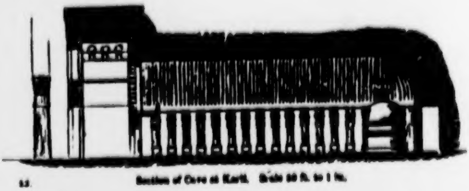
There are innumerable classic patterns which are identical no matter how you look at them. A good example is found in weavings in which the pattern on the reverse is a negative reproduction of the one on the right side. But most two-dimensional motives that are carried out in two colors force the observer to see one of the colors as figure and the other as ground.

In Carli in India there are a number of cave temples. They were actually created, as I have described above, by eliminating material—that is by forming cavities. Here the cavity is what we perceive while the solid rock surrounding it is the neutral background which was left unshaped. However, here the problem is a more complicated one than in two-dimensional figures. When you stand inside the temple you not only experience the cavity—the great three-aisled temple hollowed out of the rock—but also the columns separating the aisles which are parts of the rock that were not removed.

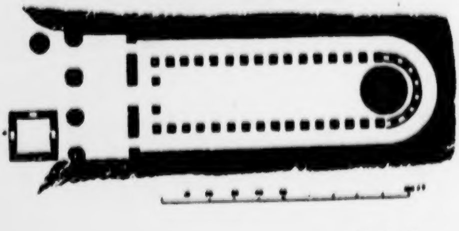
I purposely use the word "cavity" because I believe it illustrates this type of architecture better than the more neutral word "space" so often used in architectural writing nowadays.

This question of terms is of great importance. German art-historians use the word "Raum" which has the same root as the English "room" but a wider meaning. You can speak of the "Raum" of a church in the sense of the clearly defined space enclosed within the outer walls. In Danish we use the word "rum" which sounds even more like the English word but has the wider meaning of the German Raum. The Germans speak of Raum-Gefühl, meaning the sense or conception of the defined space. In English there is no equivalent. In this book I use the word *space* to express that which in three dimensions corresponds to "background" in two dimensions, and *cavity* for the limited, architecturally formed space. And I maintain that some architects are "structure-minded," others "cavity-minded;" some architectural periods work preferably with solids, others with cavities.

It is possible to plan a building as a composition of cavities alone but in carrying it out the walls will almost inevitably have certain convexities which will intrude on the observer in the same way as the pillars in the Carli temples do. Though we begin by conceiving the temples as compositions of architectural cavities, we end by experiencing the bodies of the columns. The opposite can also happen. You see a house under construction and think of it as an airy skeleton, a structure of innumerable rafters sticking nakedly into the air. But if you return again when the house is finished and enter the building, you experience it in quite a different way. The original wooden skeleton is entirely erased from your memory. You no longer think of the walls as structures but only as screens which limit and enclose the volume



53. Section of Cave at Karli. Scale 50 ft. to 1 in.



Cave temple at Carli, India. The temple was hollowed out of rock
Above:
view of interior
Below: Section, plan

of the rooms. In other words, you have gone from a conception of solids as the significant factor to a purely spatial conception. And though the architect may think of his building in terms of construction, he never loses sight of his final goal—the rooms he wishes to form.

Gothic architecture was constructional; all bodies were convex with more and more material added to them. If I were to point out a typical example of a Gothic form I would select the sculpture of St. George and the Dragon in Nicolai Church in Stockholm. The sculptor was so enamoured of spiky excrescences of all kinds that no human being could possibly conceive the shape of the space surrounding the dragon.

A column during the same period became a whole cluster of shafts. Seen in cross-section it looks as though it had broken out on all sides in small, round knobs. The transition from Gothic to Renaissance was not only a change from dominating vertical elements to dominating horizontal ones, but above all a complete transformation from an architecture of sharp and pointed structures to an architecture of well-shaped cavities, the same sort of change as that from seeing the vase as figure to seeing the two profiles.

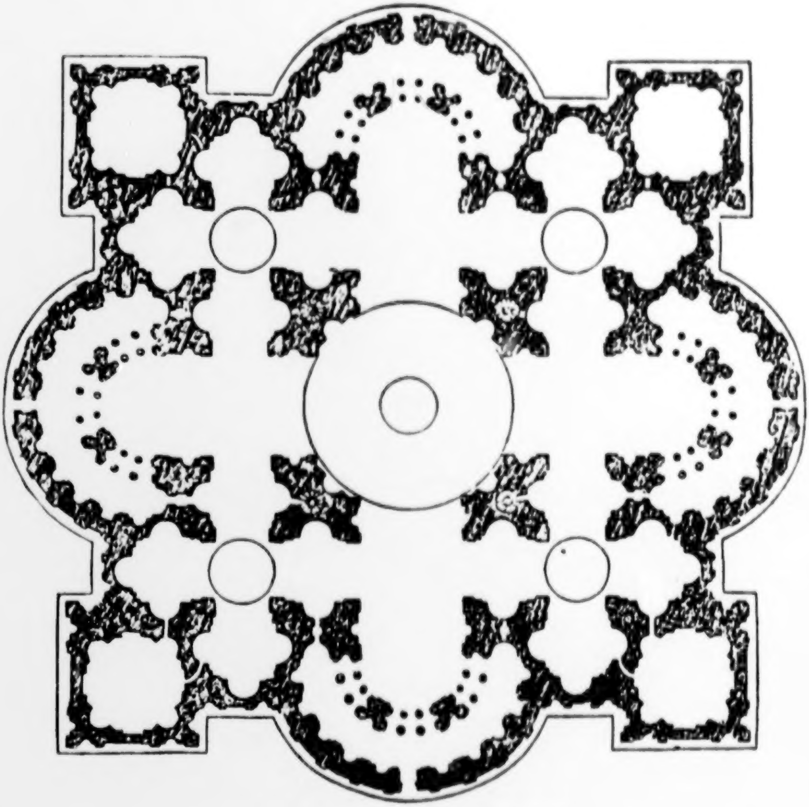
The illustrations in the work of the great Italian architectural theorist, Serlio, clearly show the new conception. A favorite Renaissance form is the circular, domed cavity. And just as the Gothic pillar was expanded on all sides into a cluster of shafts, the Renaissance cavity was enlarged by the addition of niches.

Bramante's plan for S. Peter's in Rome forms the loveliest ornament of round, domed cavities joined together and expanded on all sides by semicircular niches. If you consider the dark, hatched part as "figure" you will find that it forms a very queer remainder after the cavities have been hollowed out of the great wall masses. It is like a regular cave temple dug out of the enormous building block.

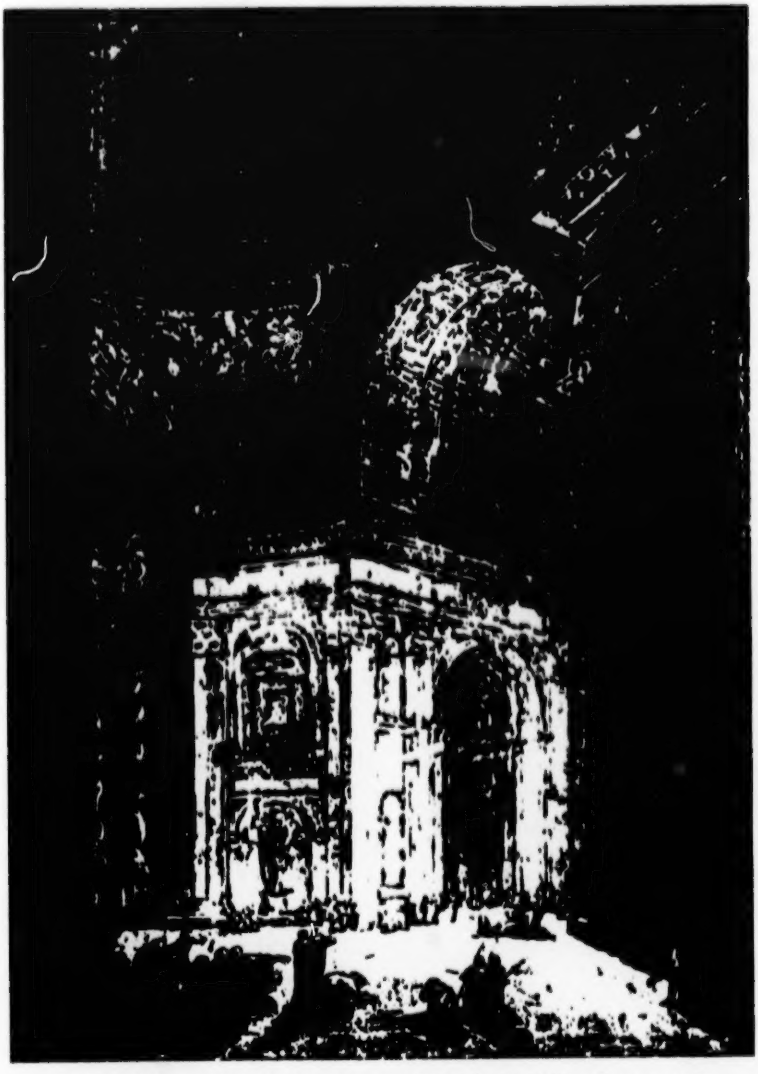
The plan, as we know, was changed and the church today has a somewhat different form. The sensitive observer will be dis-

Detail of the group "St. George and the Dragon" in the Nicolai Church, Stockholm
The picture shows the broken lance and dragon's head
Example of typical Gothic forms

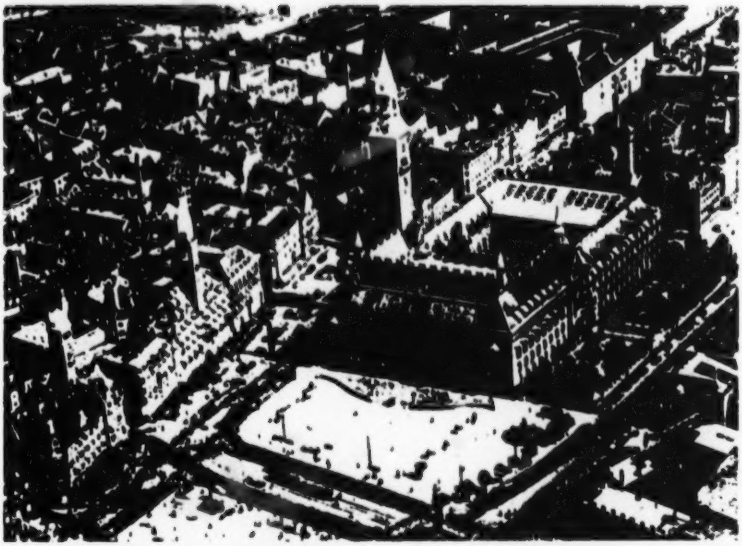
appointed at his first sight of the enormous room. In full daylight it seems uncomfortably vast and empty. But during the great church festivals the room is transformed. You now experience it as the colossal cave temple of the hatchings. All daylight is shut out and the light of thousands of candles and crystal chandeliers is reflected from the gold of vaults and cupolas. The church is now truly a vast sepulchral temple closing around Saint Peter's grave.



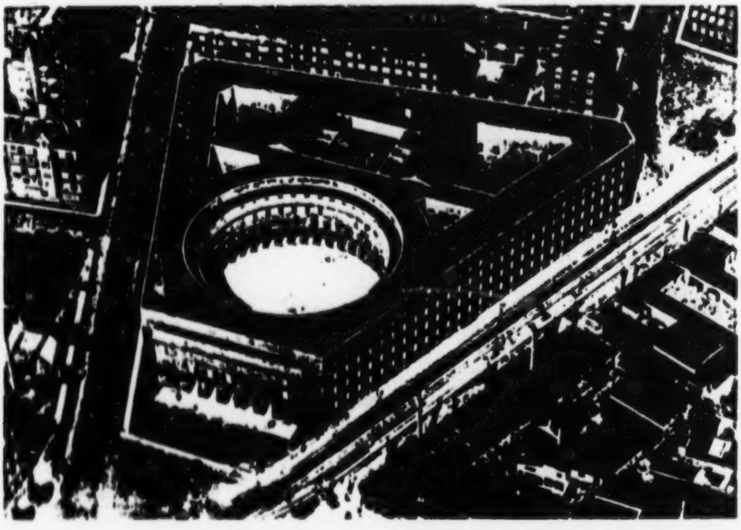
Bramante's plan for St. Peter's, Rome. From Serlio



St. Peter's, Rome, in candle light. From a drawing by Louis Jean Desprez, 1782



Copenhagen City Hall in which the architect has particularly stressed the solids terminating them in peaks and spires



Copenhagen Police Headquarters. Here the architect has formed the cavities The courtyards seem to be hollowed out of the enormous block

The extraordinary transition from Gothic love of construction to Renaissance cultivation of cavities can still be experienced. The Danish architect Martin Nyrop (1849–1921), who designed Copenhagen's City Hall, had like so many of his contemporaries the carpenter's view of architecture as a structural art. It might be called a Gothic conception. He was interested in making his constructions an æsthetic experience, among other ways by giving them rich ornamentation. Everywhere he showed how the building was put together. The City Hall is a large edifice with an irregular, spiked silhouette of gables, spires and pinnacles.

By the time the next monumental building was planned for Copenhagen the conception of architecture had swung full round. This building, Police Headquarters, is formed as a huge block cut off flat at the top. Nothing projects above the horizontal band which finishes the walls. All construction is carefully hidden; it is impossible to form any idea of how the building was made. What you experience here is a rich composition of regular cavities: circular and rectangular courts, cylindrical stairways, round and square rooms with absolutely smooth walls. Nyrop's City Hall is embellished with semi-circular bays which push out from the façade. The many cavities of Police Headquarters, on the other hand, are enriched with semi-circular niches pushing back into the solid masses of the walls.

Plan of Minerva Medica, Rome. From Palladio